

Refrigeration Service Engineer

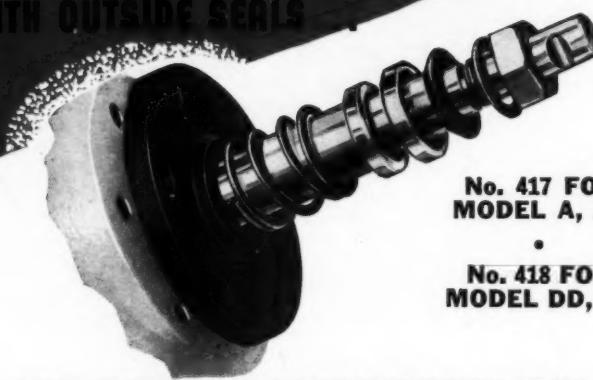
TECHNOLOGY DEPT.

VOL. 14 NO. 7

* * *

JULY 1946





No. 417 FOR
MODEL A, AA

No. 418 FOR
MODEL DD, FF

FOR BETTER PERFORMANCE USE



CHICAGO
VALVE PLATES

CHICAGO
SEALS

Chicago Seals
MODERN DESIGN

CHICAGO SEAL CO. 20 N. WACKER DR., CHICAGO 6, ILL.

THE REFRIGERATION SERVICE ENGINEER, Nickerson & Collins Co., Publishers, 435 N. Waller Ave., Chicago 44, Ill. Published monthly, Vol. 14, No. 7, July, 1946. Entered as second class matter March 4, 1938, Chicago, Ill., under the Act of March 3, 1879. Subscription in the United States, \$2.00 per year; all other countries, \$3.00 per year.

The Ansul Research Staff
REPORTS ON

WAX causes frozen valves *too!*

HERE'S FURTHER

Proof

RESULTS OF MACHINE TESTS

The equipment used consisted of $\frac{1}{4}$ hp. motor, reciprocating compressor and dry coil with the thermostatic expansion valve located in contact with the coil.

A filter of steel wool and fine copper screen was placed in the liquid line just ahead of the expansion valve. The liquid line leading to the filter was coiled about the expansion coil to insure feeding cold liquid to the filter. The expansion valve, liquid line, filter and expansion coil were placed in a metal container and insulated with rock wool. A pentane thermometer, attached to side of filter, recorded temperatures which were, of course, much lower than corresponding temperature taken in other parts of the equipment.

After the equipment had operated for four days with the filter at approximately -50 degrees F., the filter was quickly removed, dismantled and photographed while still cold. For example, Photograph A shows a considerable separation of wax. Photograph B shows a portion of this wax after removal from the filter.

ANSUL WHOLESALERS are ready and equipped to render an intelligent, co-operative service to refrigeration engineers and maintenance men on problems which arise from time-to-time in the operation of refrigerating systems.

FOR EXAMPLE:

Samples of ice machine oils, submitted by users of Ansul Refrigerants to Ansul Wholesalers, are tested by Ansul laboratories without charge by the Ansul Standard Wax-Oil Separation Method. This approved method, developed and standardized especially for use in connection with oils used in refrigerating systems, provides an accurate determination of the amount of wax which separates from an oil at low temperatures. *REG. U.S. PAT. OFF.



SEND FOR THIS BULLETIN

An informative reprint, "THE SEPARATION OF WAX FROM OIL-REFRIGERANT MIXTURES," will be sent on request. No obligation. Just address . . .



ANSUL REFRIGERANTS ARE AVAILABLE AT LEADING WHOLESALERS EVERYWHERE

ANSUL CHEMICAL COMPANY

REFRIGERATION DIVISION, MARINETTE, WISCONSIN

DISTRIBUTORS FOR KINETICS "FREON-11" "FREON-12" "FREON-21" "FREON-22" AND "FREON-113"



A—Wax separated on filter at -50 ° Fahrenheit



B—Wax removed from filter at -50 ° Fahrenheit

REMEDIES

To eliminate the wax trouble in expansion valves and coils:

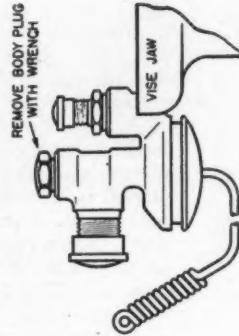
1. Use an oil which separates little or no wax from its mixture with the refrigerant at the operating temperature of the valve.
2. Install an oil trap to cut down the amount of oil (and consequent wax) circulating with the refrigerant.

VISUAL MOISTURE INSPECTION

No. 12 of a Series

It was pointed out in No. 9 of this series that moisture could freeze at the expansion valve in a manner to either plug the orifice or hold the needle open. It was likewise pointed out that a grain of water is a sizable quantity and sufficient to cause either type of freeze-up. It was further pointed out in No. 11 of this series that sufficient moisture to cause freeze-ups on low temperature cabinets could possibly come from the refrigerator itself. These facts emphasize the necessity of proper dehydration.

3. Place a piece of dry ice firmly against the valve body as shown in Fig. 1. (Unit still operating continuously.)
4. Close liquid line valve and pump unit down.
5. Quickly remove valve from unit and seal its connections to keep moisture from condensing inside. Keep valve temperature below the freezing point of water by further cooling with the dry ice.



Space limitations prevent giving the full text of this service bulletin illustrated page. The service bulletin for your copy.

many types of expansion valves can be opened easily in the field for the purpose of inspecting the needle and seat. Some valves have the bottom plug sealed with solder while others employ a gasket as a seal, but in either case if

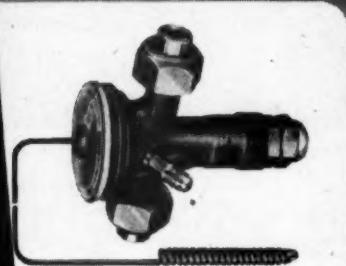
employ a gasket as a seal, but in either case if

Proved Dependability "DETROIT" EXPANSION VALVES

Many years of use in every type of refrigeration installation have proved the dependability of the "Detroit" line of Expansion Valves. Refrigeration men everywhere rely on them to make good refrigeration installations better.

**WRITE
FOR YOUR COPY
OF THIS
SERVICE HELP**

This is the twelfth of a series of service bulletins, published by Detroit Lubricator Company. They are printed on $8\frac{1}{2}'' \times 11''$ paper, punched for a standard loose leaf binder. Copies may be had on request. Write for yours.



NO. 899 DURA-FRAM EXPANSION VALVE—Capacity 1.6 to 6 tons on Freon 12, 3 to 11 tons Methyl Chloride. Has external equalizer and forged union connections. Inlet and outlet $3\frac{1}{8}''$, $\frac{1}{2}''$ and $\frac{5}{8}''$ O.D. tubing. Flared nut for $\frac{1}{4}''$ tubing equalizer.

DETROIT LUBRICATOR COMPANY

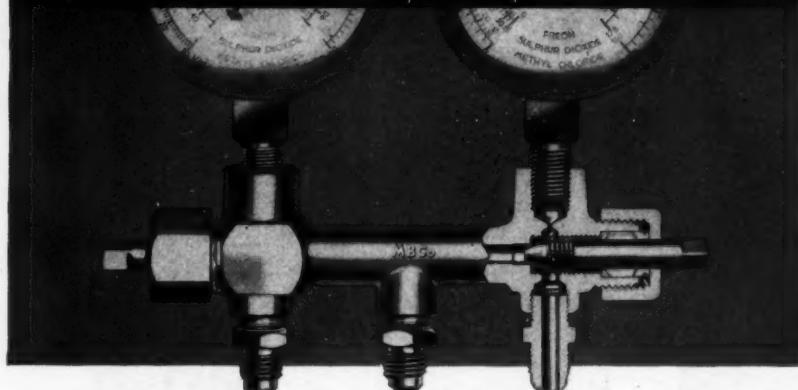


"Detroit" Heating and Refrigeration Controls • Engine
Safety Controls • Safety Float Valves and Oil Burner
Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

General Offices 5900 TRUMBULL AVENUE, DETROIT 8, MICHIGAN
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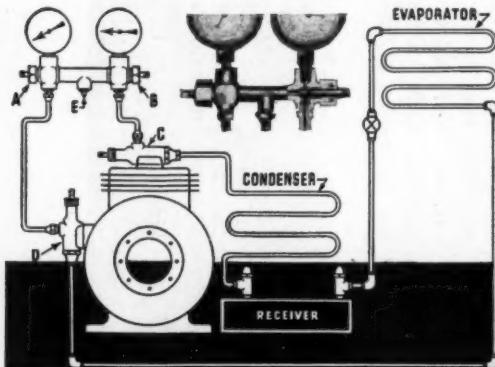
MUELLER BRASS CO. TESTING MANIFOLD

A Handy Tool for the Serviceman



The Mueller Brass Co. Testing Manifold is a service tool. It enables a service man to quickly install pressure gauges to diagnose trouble, and facilitates charging, purging, adding oil, etc.

This device allows the service man to watch the pressure gauges during charging and purging. It saves considerable time on almost any service work that must be done on the compressor.



DIRECTIONS FOR USE

1. To Observe Operating Pressures

Valve A—Closed Valve B—Closed
 Valve C—Back Seat Cracked Open
 Valve D—Back Seat Cracked Open

2. To Charge Refrigerant Through Compressor

Connect Refrigerant Drum to E
 Valve A—Open Valve B—Closed
 Valve C—Back Seat Cracked Open
 Valve D—Front Seated

3. To Purge Receiver

Connect Purge Line to E
 Valve A—Closed Valve B—Open
 Valve C—Back Seat Cracked Open

4. To Charge Liquid Into High Side

Connect Refrigerant Drum to E
 Valve A—Closed Valve B—Open
 Valve C—Mid Position

5. To Build Up Pressure in Low Side for Control Setting or to Test for Leaks

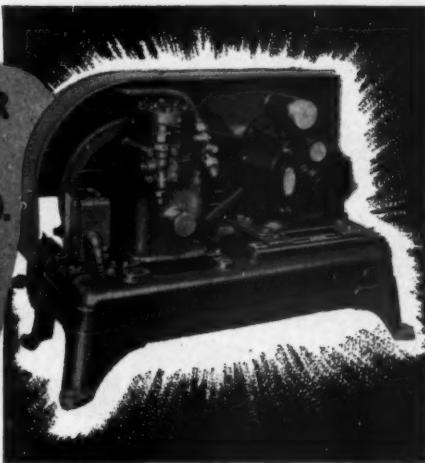
Seal E with Seal Cap
 Valve A—Open Valve B—Open
 Valve C—Back Seat Cracked Open
 Valve D—Mid Position

6. To Charge Oil Through Compressor

Connect Oil Supply to E
 Valve A—Open Valve B—Closed
 Valve C—Open—Back Seated
 Valve D—Closed—Front Seated

MUELLER BRASS CO.
PORT HURON, MICHIGAN

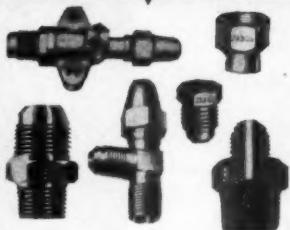
UNIVERSAL COOLER
USES
MUELLER BRASS CO.
PARTS IN THEIR
CONDENSING
UNITS



UNIVERSAL COOLER

Division of INTERNATIONAL DETROLA CORP., Marion, Ohio

THESE PRODUCTS



BUILT-IN QUALITY • TIME-TESTED PERFORMANCE

Mueller Brass Co. Valves, Fittings and Accessories are sturdy and dependably built. They have a well-earned reputation for built-in quality and time-tested performance.

The Mueller Brass Co. line of refrigeration products is exceptionally complete, and all products are designed and manufactured specifically for mechanical refrigeration work. **THEY ARE USED BY ALL OF THE LARGEST MANUFACTURERS THROUGHOUT THE UNITED STATES.**

MUST BE GOOD!

Prominent in the list of nationally-known manufacturers who use Mueller Brass Company products is Universal Cooler, Division of International Detrola Corporation. One of the pioneers in the field of refrigeration, Universal Cooler is completing a full quarter century of service to many leading manufacturers of refrigeration equipment. Since 1922, Universal Cooler has specialized in designing and manufacturing refrigeration condensing units, building a complete line of hermetically-sealed, remote and self-contained type units ranging from 1/8 to 15 h. p.

In manufacturing these refrigeration condensing units, Universal Cooler employs the most modern production methods, using modern machine tool equipment, automotive type assembly lines, complete research and design facilities and "Controlled temperature" rooms for simulating actual operating conditions in order to insure positive, accurate testing of equipment before shipment.

MUELLER BRASS CO.
PORT HURON, MICHIGAN



Here's a very profitable item
for every distributor and dealer
to PUSH RIGHT NOW!

Temprite draught beer coolers lead the way to HOT volume in HOT weather!

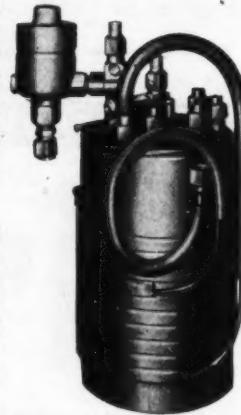
Warm weather boosts tavern beer business but at the same time reduces the efficiency of many existing draft beer refrigeration systems! And any tavern owner, inconvenienced by equipment which cannot properly carry hot weather loads, will naturally consider reconditioning or replacing existing equipment. This is the time to push TEMPRITE draught beer coolers and dispensing units! A TEMPRITE unit will handle hot weather demands to perfection!

TEMPRITE CORRECTS COMMON DRAUGHT BEER TROUBLE

Warm beer, foamy beer, waste beer, unpalatable beer and slow service result in loss of money, and even more important, loss of customers who are dissatisfied. TEMPRITE cooled draught beer is *RIGHT from the beginning to the end of every keg.*

The high refrigerating efficiency, small size and special beer dispensing design make TEMPRITE units ideal for both reconditioning installations (where the condensing unit is available) or complete new installations.

Two different models are available from both the TEMPRITE factory and local wholesale distributors. Write or wire for information on local source of supply and latest literature and prices.



NOW AVAILABLE
FOR IMMEDIATE
DELIVERY

TEMPRITE PRODUCTS CORP.

Originators of Instantaneous

80° 40°

Liquid Cooling Devices

45 PIQUETTE AVENUE

DETROIT 2, MICHIGAN

DRYSEAL PIPE THREADS

An improvement in tube fittings every refrigeration man should know about . . . Now being furnished in

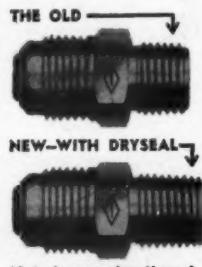
IMPERIAL TRIPLE SEAL FITTINGS

The Society of Automotive Engineers has issued specifications for an improved type of pipe thread. This new pipe thread gives pressure-tight joints without the use of lubricant or pipe dope. It is known as the Dryseal American (National) Standard Taper Pipe Thread and varies from the American Standard in that:

1. There is a difference in the truncation of roots and crests of threads. (See "A" at right.)
2. Effective length of thread has been made consistent for all sizes, with sizes over $\frac{1}{8}$ " lengthened appreciably. (See illustration below.)
3. Closer control of gaging is required to assure proper diameter, form, taper, etc.

NO NEED TO USE DOPE ON THREADS

In the Dryseal Pipe Thread the truncation of the root is greater than the truncation of the crest, and contact between root and crest is assured in assembly before flanks of threads engage. (See "B" at right.) The elimination of clearance at crest and root prevents spiral leakage and renders joints pressure tight without lubricant or pipe dope and without application of excessive wrench torque.



Note longer pipe thread on new fitting with Dryseal.

FULL LENGTH DRYSEAL ON IMPERIAL FITTINGS

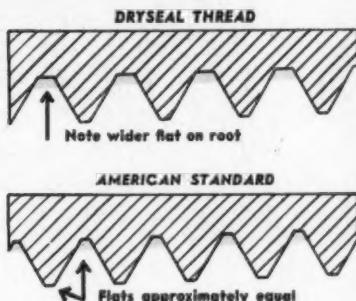
Full length Dryseal Taper Pipe Threads are being incorporated on pipe thread connections on all Imperial Flared Tube Fittings. Many shapes and sizes are already coming through with these threads; others are being changed. All sizes $\frac{3}{8}$ " O.D. and larger also have the Imperial Triple-Seal feature on connections, an important extra protection against leakage.

See Your Jobber

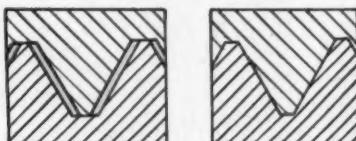
THE IMPERIAL BRASS MANUFACTURING COMPANY
534 S. Racine Ave., Chicago 7, Ill.

IMPERIAL

A. How Dryseal Differs from the American Standard . . .



B. Assembling Dryseal Thread . . .



HAND TIGHT
Note that crests and roots of threads have already engaged while flanks of thread are apart.

WRENCH TIGHT
Note that flanks or sides of thread have now engaged making a tight metal-to-metal seal.

Flats and clearances in drawings are exaggerated to emphasize distinctive features of Dryseal threads.

Fittings • Valves • Dehydrators • Filters
Floats • Charging Lines • Tools for Cutting, Flaring, Bending, Ceiling, Pinch-Off and Swaging





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EXTRA DRY ESOTOO **V-METH-L**
(Liquid Sulfur Dioxide) *(Methyl Chloride)*

*If you don't already know him, let us introduce you;
mail the coupon today.*

VIRGINIA

SMELTING COMPANY

WEST NORFOLK, VIRGINIA

NEW YORK • BOSTON DETROIT
Distributors of "Freon" Refrigerants 11, 12, 21, 22, 113

VIRGINIA SMELTING COMPANY — Dept. RS-96
WEST NORFOLK, VA.

Gentlemen:

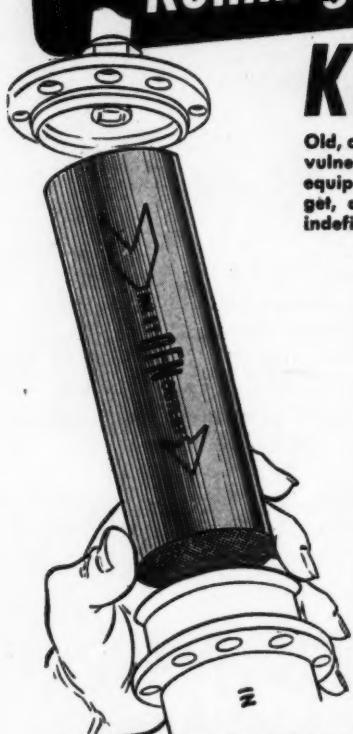
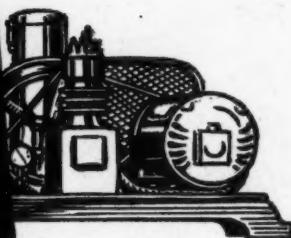
Please give me the name of the VIRGINIA
wholesaler nearest me.

Name..... Position.....

Firm.....

City..... Zone..... State.....

To keep
AN OLD SYSTEM
Running...



KEEP IT DRY!

Old, often leaky, refrigeration systems are especially vulnerable to damage by freezing. And with new equipment curtailed and replacement parts hard to get, a forced shutdown can easily be prolonged indefinitely.

HOT WEATHER PRECAUTION! Get rid of excess moisture with a special DFN High Moisture Cartridge.* Then, switch to the standard DFN cartridge for triple protection against moisture, sediment and acid.

The quick interchangeability of DFN cartridges makes servicing cleaner, faster and safer. The hermetically sealed, factory-assembled cartridges are quickly inserted in the demountable shell without loss of dehydrating strength. The extra capacity of the DFN cartridge's exclusive strainer-filter assembly makes servicing less frequent. Ask your distributor about this versatile, complete protection system. Write for catalog R-7.

*Other special DFN cartridges available to combat unusual conditions: Acid and Moisture, Sediment and Sludge, Sediment and Moisture, Sediment.

MCINTIRE CONNECTOR COMPANY, 255 Jefferson St., Newark 5, N. J.



DEHYDRATORS • STRAINERS



DEHYDRATES
FILTERS
NEUTRALIZES

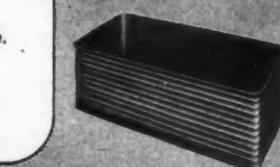
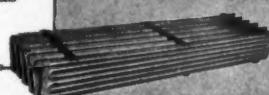
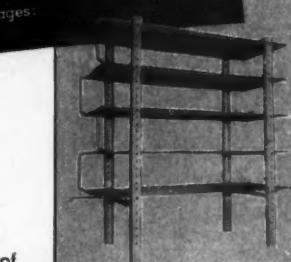
FILTERS • NEUTRALIZERS

KOLD-HOLD EVAPORATOR PLATES

For ALL Lowside Applications

The New Kold-Hold "Quick Action" Serpentine Plates offer outstanding economies and efficiency. Specifically, these plates either used separately, in banks, in plate stands, or as complete cabinet liners, assure you the following advantages:

- 1 Easy installation.
- 2 Maximum prime surface.
- 3 Highest rate of plate heat acceptance.
- 4 No possibility of short circuiting the flow of refrigerant which flows in one continuous pass from inlet to outlet.
- 5 Oil logging positively prevented.
- 6 Minimum pressure drop.
- 7 Tested to 300 lbs. per square inch pressure.
- 8 Has an appreciably higher "K" factor.
- 9 Thoroughly cleaned and dehydrated.



For transportation of perishables, Kold-Hold Truck Plates prevent loss from spoilage, preserve truck bodies and eliminate unnecessary time losses from loading and unloading.

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(Write for Complete Catalog!)

KOLD-HOLD MANUFACTURING COMPANY, 502 N. Grand Avenue, Lansing 4, Michigan

Available Now! These Repair Parts Fit MILLIONS of MOTORS



NET
To Repair Trade
\$8.57

Every Repairman needs this Handy "On-the-Job" Assortment of Wagner Motor Repair Parts

Be a "One Tripper"—carry this kit in your car for "on-the-job" motor repairs. It contains fast-moving parts for repulsion-start induction brush-lifting and capacitor-start induction-run motors—up to and including $\frac{1}{2}$ hp.

Order for each
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at right. Also
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325 authorized
service stations.

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Gentlemen:
Please ship _____ Motor Parts Assortment M-1 at \$8.57
(Quantity)
each (Net) total \$ _____.

Also send
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Parts Catalog
MU-40. Company _____
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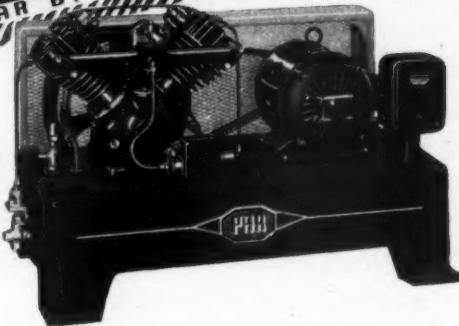
Wagner  **Electric**



Balanced Performance

THAT'S PAR
with popularity hitting an
all time high. Proof that
by Comparison, they're buying PAR

PAR BY *Lynch*



PAR Jobbers, in important trading centers from coast to coast, can give you the story of Par Refrigeration. Models and sizes from 1/6 to 5 H.P. Write for catalog R-97.

**PAR—Condensing Unit Line sold exclusively through
Franchised Refrigeration Equipment Wholesalers!**

Lynch . . . *By Comparison — You'll Buy PAR*
Manufacturing Corporation
General Offices, Toledo 1 • Factory, Defiance, Ohio, U.S.A.

WHEN SERVICE CALLS ARE POPPING FAST...



*Conveniently Warehoused
Competitively Priced*

More than firecrackers pop in July . . . for hot weather always brings a rush of calls for the refrigeration service man. For quick service in meeting their customers' needs, refrigeration service organizations are depending more and more on Kelvinator's 50 strategically located parts depots . . . where complete stocks of refrigeration parts and supplies are available at competitive prices . . . and fast delivery is possible in every locality.

NASH-KELVINATOR CORPORATION,
Detroit.



**KELVINATOR OFFERS VALUABLE
HELP FOR YOUR
SERVICE TRAINING PROGRAM**
For training additional personnel, refrigeration service organizations will welcome the valuable aid of Kelvinator's service training material. One of these useful training helps is illustrated above—the sturdy, pocket-size, ready-reference "Trouble Shooters' Guide for Refrigerator Service Men." Ask your local Kelvinator Distributor or Zone Office about it.

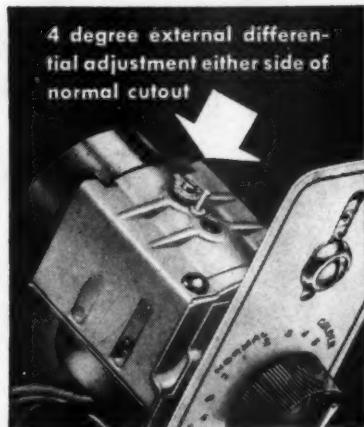

Kelvinator CONDENSING UNITS
 REFRIGERATION PARTS AND SUPPLIES

BUY KELVINATOR FOR ALL YOUR REFRIGERATION REQUIREMENTS

FILLING ALL NEEDS

The Cutler-Hammer Line of REFRIGERATION REPLACEMENT CONTROL

This One Universal unit
alone covers 60% of
all needs.



Bul.
9521N9

Adjustable Mounting Brackets

Maximum Mounting Centers..... 4-3/16
Minimum Mounting Centers..... 2-3/16

Adjustable Cutout Feature—Differential can be increased 4 degrees by turning indicator in "Hi" direction and decreased 4 degrees by turning in "Lo" direction.

Adjustable Range—Turning screw clockwise lowers settings and counter-clockwise raises settings.

Operating knob can be adjusted to meet various evaporator scale settings. New knob is ideal for varying shield thicknesses. Makes this control adaptable to wider range of single dial replacement jobs where overload is not required in unit.



The Cutler-Hammer line of Refrigeration Replacement Control will meet all the refrigeration serviceman's requirements. One Cutler-Hammer Control Unit alone... the *Universal* Replacement unit... will handle 60% of his needs. And where exact replacement control is needed, that item also will be found in the C-H Exact Replacement Control line... individually packed, clearly labelled, complete with dial plate, mounting screws, trim washers and full instructions for mounting and adjustment.

Behind this line are 50 years of control specialization and thorough knowledge of merchandising requirements. Thus, the line is recommended by outstanding refrigeration wholesalers from coast to coast and alert service organizations everywhere use it to reduce investment in stock, to insure regular and rapid turnover, faster completion of the job, and greater all-round satisfaction. CUTLER-HAMMER, Inc., 1363 St. Paul Ave., Milwaukee 1, Wisconsin.



DOMESTIC, SEMI-COMMERCIAL AND COMMERCIAL CONTROL

For YOUR
Refrigeration Needs

Artic
REFRIGERANT

DU PONT
METHYL
CHLORIDE

99.5% Pure. Dry. Uniform

HIGH-PURITY Du Pont "Artic" Methyl Chloride is designed to meet your refrigeration needs.

ORDER NOW! It's available as you need it from wholesalers' stocks in principal cities.

EMPTY CYLINDERS NEEDED—Return them promptly to assure rapid deliveries.

DU PONT

METHYL CHLORIDE SPECIFICATIONS

Purity	99.5% by wt. max.
Moisture	0.008% by wt. max.
Acid as (HCl)	0.001% by wt. max.
Residue on Evaporation	0.01%	by wt. max.
Boiling Range (760mm)	—24.6° to —23.6° C.	
Color	water white, clear

For technical information, write: E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

DISTRICT SALES OFFICES: *Electrochemicals Dept.* Baltimore, Boston, Charlotte, Chicago, Cleveland, Detroit, El Monte, New York, Philadelphia, San Francisco; *Ammonia Dept.*: Offices in New York, Philadelphia, Chicago, St. Louis.

DU PONT ELECTROCHEMICALS

BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY





Marsh Standard Pressure Gauge



Marsh Standard Compound Gauge



Marsh Gauge with Corresponding Temperature Scales



Marsh Ammonia Gauge



Marsh Remote Reading Dial Thermometer

MARSH Spells Lasting Accuracy

Every field has its leader, but few are the fields where a name is so synonymous with absolute dependability as is the name Marsh on a pressure gauge or dial thermometer.

Producing gauges and thermometers that *spell* lasting accuracy involves laboratory control reaching into every step of production . . . advanced methods of forming bourdon tubes and obtaining jewel-like accuracy in sectors, pinions, staffs and bearings . . . methods of gauging and checking of each component so that the final assembly must be right and *stay* right.

Ask FOR THIS NEW BOOKLET

The Marsh Gauges and Thermometers commonly used in refrigeration service are illustrated here and completely described in a new booklet which fully covers their construction and service range. Write for your copy.



Use...

THE MARSH "SERVICEMAN"

Here is the accurate answer to that vital question, "What's going on behind the closed door?" The remote reading feature does the trick. Note below how the generous length of capillary tubing is coiled up in the case when not in use. The "Serviceman" is guaranteed accurate within one degree. It has endless uses—is one of the most important tools in the servicing kit.



JAS. P. MARSH CORPORATION
2059 Southport Ave., Chicago 14, Ill.

MARSH

Refrigeration Instruments



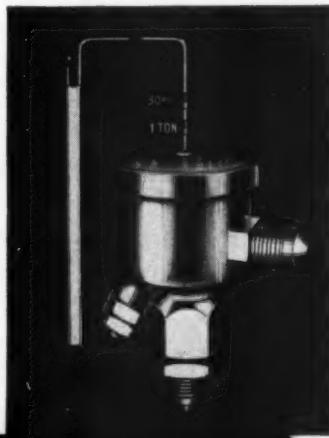
Liquid Charged...

THE NEW ALCO THERMO-LIMIT VALVE

*J*t may be placed anywhere in the refrigeration system, at any temperature, in any position.

The ALCO THERMO-LIMIT is a "safety" valve that limits pressure to prevent motor overload. Its design is simple. Parts are interchangeable so that pressure, capacity and super-heat can be changed in the field.

Available at your wholesaler's for smaller capacity commercial refrigeration. Ask for our Bulletin 152.



ALCO VALVE CO.

843 KINGSLAND AVE. • ST. LOUIS 5, MO.

Designers and Manufacturers
of Thermostatic Expansion
Valves; Pressure Regulating
Valves; Solenoid Valves;
Float Valves; Float Switches.



Even an ESKIMO...

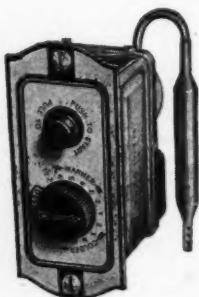
would appreciate the constant temperature maintained by a Ranco Refrigeration Control.

Ranco has never tried to build a control for an Igloo but there is a general or exact replacement control for practically every commercial and domestic freezing or cooling unit.

Service men who install Ranco Controls also appreciate the customer satisfaction they receive . . . because of Ranco's precision construction for precision operation . . . for its long, trouble free life . . . for its sturdy, pleasing appearance.

For the right replacement, for the best performance.

SEE YOUR JOBBER



TYPE KOD

Ranco Inc.
COLUMBUS 1, OHIO

THE REFRIGERATION SERVICE ENGINEER

The
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of
Refrigeration
Sales, Service
and Installation

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Superior Deluxe* DEHYDRATORS



...readily refillable...on the job, or in the shop. When the gasket-type, inlet-end Strainer Union is removed, you get a generous unrestricted dehydrant removing and filling opening.

High quality filter pad...fortified by supported screens at outlet-end removes even the finest particles of foreign matter from the refrigerant stream.

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Superior FILTERS

Equipped with highly efficient sack-type filter, plus fine screen at outlet-end. End fittings are silver-soldered to end caps...end caps are soft-soldered to shell...removable for replacement or cleaning filter sack.



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NO. 151

SUPERIOR VALVE & FITTINGS COMPANY
PITTSBURGH 26, PENNSYLVANIA

OFFICES IN PRINCIPAL CITIES • STOCKS CHICAGO (6) • LOS ANGELES (15) • Jobbers Everywhere

IN THIS ISSUE—

Before the war our merchant marine fleet was extremely small for a country of our size and the amount of refrigeration used by it was a mere drop in the bucket compared to refrigeration used in any other field. The war changed all that to the extent that marine refrigeration now is really big business. We built the boats during the war for troopships and Navy auxiliaries. They are being converted now for the merchant marine. We are in the process of building up a merchant fleet more in keeping with our size, all of which opens up vast new opportunities for installation and servicemen. The article on page 25 entitled "812,000,000 Worth of Marine Refrigeration" by Donald F. Daly, will give some idea of its magnitude when you realize that this is the record of only one of the several shipyards on our coasts.

The new column "Getting Down to Business" by Waylan Clark on page 30 of this issue, broaches the highly important and very interesting subject of advertising. It is discussed by the author from the viewpoint of the service field and the suggestions he makes apply specifically to the problems of the service company. More on the subject is promised for the next issue.

For those who are interested in building their own farm or home freezers, Al Sawyer provides some suggestions on the arrangement and hook-up of cold plates for different types of freezers. See page 32.

Harold J. Koch of Cincinnati, Ohio, is another successful operator who believed and has proven that good service is the best foundation on which to build sales. He believed it eight years ago when he started out alone with no more than a tool kit and a car. He believes it more today, now that he is operating a 28-man organization. Read the story of his development by William Henry Morrison on page 33.

According to Robert Latimer, the author of the article on page 38, frozen pastries offer a good field for the refrigeration service engineer. It is a growing branch of the

frozen foods field and is due for an increase in popularity with bakers.

Few suggestions have yet been advanced on the design of a truck used exclusively for refrigeration service. An ex-GI, however, had a couple of years to think it over while serving overseas and came up with the pride of his community. Views and a description of it appear on page 40.

A variety of worthwhile service suggestions appear in this month's Service Pointer Section appearing on page 41, among them two useful tools which may help to keep your blood pressure down and your hands from looking like raw hamburger.

Under Questions and Answers, page 43, is a comment which relates one reader's method of changing the hookup of a refrigerating system so as to be able to pump up a high pressure, and test for small leaks.

If you find it hard to understand the long continued delay in the shipment of new appliances or the increasing shortage of some parts, read the item entitled "Copper and Copper Products," page 46.

COVER

OUR front cover this month shows the main control panel for the refrigerating equipment used in Marine refrigeration. See article on page 29. Mounted on the panel are nine high-low pressure cut-out switches, and high and low pressure gauges. Push button at left is control for main condenser water pump. Push button at right is for water defrosting pump. Gauge at upper left is for condenser water pressure. Gauge at upper right is for defrost water pressure. The instrument at right center of main panel is an electrical thermometer, by means of this instrument temperatures can be taken for any, or all rooms without leaving the machinery room. Upper right is the alarm system for the refrigerated rooms. The gentleman in the picture is Del Carman, Foreman of Yard No. 3's Refrigeration Department at Richmond, Calif.

WHEN SPECIAL REQUIREMENTS ARE NOT STANDARD
Pressure Control a Problem...

Specify White-Rodgers!

Our standard controls
have readily filled
all these demands...

we must be able to mount the control
above or below the control point

if the control is in a room other
than that being controlled as to
temperature, we must be sure that it
is not affected by the temperature
in that room.

we should not have to readjust each
control for altitude variations or
atmospheric pressure whether installed
in mountainous areas or at sea
level.

be sure that the reaction to tempera-
ture change is positive under all
circumstances

have dials evenly calibrated through
the entire range and clearly marked
as to setting so that we can eliminate
guesswork

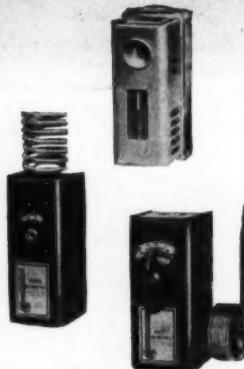
it must have a mechanism that will
stand up under the roughest kind of
handling yet be sensitive to the
slightest temperature variation.

contacts must close with a positive
snap action. The construction of
the switch mechanism must assure this

what we insist on is a uniform react-
ion to temperature changes no matter
where it occurs within the range of
the control

BY MEANS of the Hydraulic-Action principle, White-Rodgers standard controls have a flexibility of application that permits their use on many installations demanding the particular features of a custom-built control.

Whatever the application, when accurate control of temperature or pressure is required, White-Rodgers controls are preferred... by manufacturers for simplicity of installation; by service men for ease of adjustment; by all who use them for their thorough dependability. Write for refrigeration catalog and installation data today.



WHITE-RODGERS ELECTRIC CO.

ST. LOUIS 6, MISSOURI

Controls for Refrigeration • Heating • Air Conditioning



The Marine Leopard built by Kaiser shipyards as a troopship then converted to a cargo ship for our Merchant Marine.

Photos by Mrs. Terry Blakeslee

\$12,000,000 Worth of Marine Refrigeration

By DONALD F. DALY

UNLESS you live on either coast of our Country, it is likely that you have not considered the magnitude of Marine refrigeration and the work it has provided for installation and servicemen.

With the advent of V-J Day, the Maritime Commission ordered the two remaining hulls of the Kaiser Co. contract to be converted to cargo carriers. One of them, pictured above, was completed recently and was delivered to the American President Lines for service in around-the-world-cargo carrying. A modern ship in every respect she will, with others of her class, form the backbone of our post-war Merchant Marine.

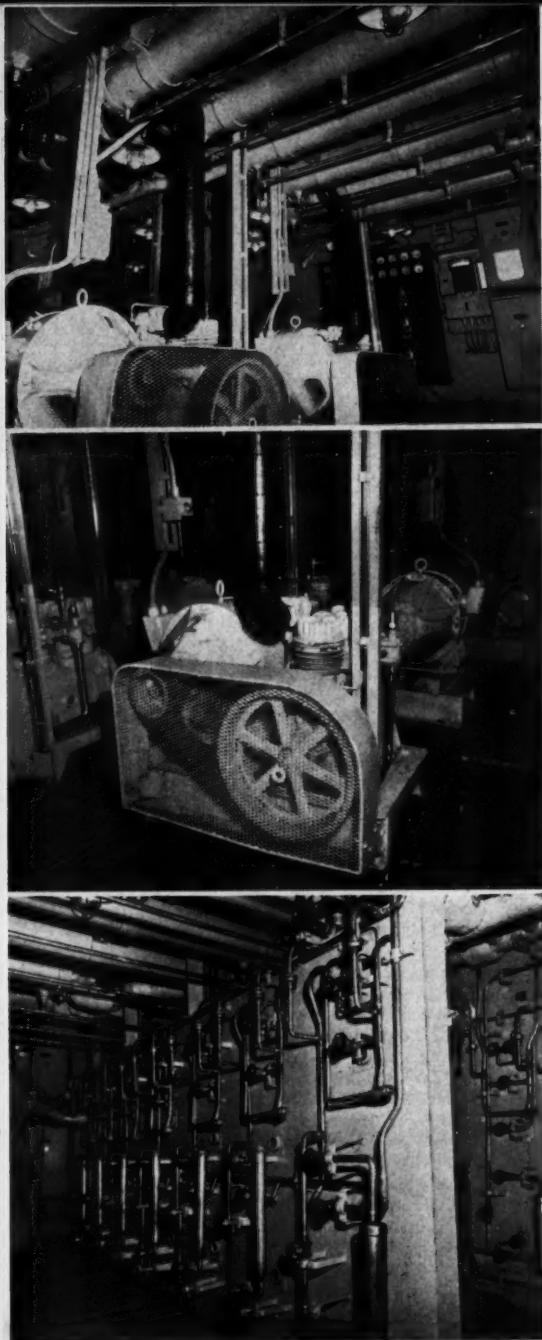
The magnitude of the jobs done by some of the shipyards during the war almost staggers the imagination. We hear these million dollar figures every day, but to the average man they don't mean a thing. It is only when they are compared in terms of something we see or work with every day that they take on meaning. For the average independent operator, who does an annual business of from ten to one hundred thousand dollars they are almost beyond comprehension.

\$12,000,000 is a conservative estimate of the amount of refrigeration installations done by the Kaiser Co. Inc. Shipyard No. 3 at Richmond, California. The man who was in charge of, and responsible for this tremendous undertaking is genial Dick Carman. This responsibility seems to rest lightly on his shoulders for when I talked to him he seemed to have all the time in the world, and apparently not a care. I apologized for taking up so much of his time. He said, "don't let it bother you—I have my work so well organized that it practically runs itself."

When you consider that he started his department from scratch in 1942 when the manpower shortage was at its worst, and experienced refrigeration men were almost non-existent, the fact that he was able to accomplish this perfection of organization is little less than miraculous. It is a tribute to his ability and reveals the character of the man more than any other fact could. Before coming into Marine work Mr. Carman was employed by the Westinghouse Co. in Idaho and Utah. He did the engineering and

(Continued on page 28)

The Ship Story



One of the major changes required for converting trooperships to peace time trade, was in the refrigeration equipment. What had been used for the troop and ship stores refrigeration, now became, with certain alterations, the ship's store refrigeration. An entirely new and much larger plant was needed for the cargo refrigeration.

The plant is modern in every respect, and has some innovations that are new in their application. There are nine Carrier 7-H-6 condensing units. All units pull on a load. There are no stand-by units, but all units are interlocked so that any unit can pull on any load. The refrigerated cargo space occupies all of one hold and is on four levels. That's equivalent in height to a four story building. The condensing units are on the upper level and the lowest coil is about forty feet below the machinery room. No oil traps or oil separators are provided.

Bear in mind that all of the machinery and equipment shown in the pictures is in a room 20'x24'. That's about the size of a two-car garage. Every inch of space in that room is taken up by equipment. It is the most complicated piping job imaginable, but the plant is comparatively simple to operate.

The view (top left) shows one section of the machinery room. Seven of the nine water cooled condensers are shown on the overhead. Two of the Carrier 7-H-6 units are in the foreground. The room is so small it is impossible to show all of the equipment in one picture. The two boxes at the right are motor controllers. There are 18 of these motor controllers in this room.

Five of the nine carrier units are shown in the view left center.

At left bottom is a view of the liquid distribution manifolds in compressor room. Receivers are in back of this screen bulkhead. Note that receiver sight glasses extend through bulkhead. Lower piping connections are liquid lines from bottom of receiver. Center line of piping is the inter-lock system by means of which any unit can be used on any load. The suction lines are also interlocked in the same manner. Upper line of piping is relief manifolds to overboard discharge. Liquid line is tied into overboard discharge line through

in Pictures

a rupture disk which will blow if pressure exceeds 250 lbs. Top of receiver is protected by spring operated relief valve which will blow at 200 lbs. pressure. Overboard discharge has manually operated valve just as the line goes through skin of ship. A gauge near this valve is read frequently by the operator. If excessive pressure develops, and he cannot remedy the cause, the "Freon" is blown to atmosphere. Total charge for all systems is 3000 lbs. of "Freon" 12."

Dick Carman, superintendent of the construction crew, is the handsome gentleman gracing the left side of this view.

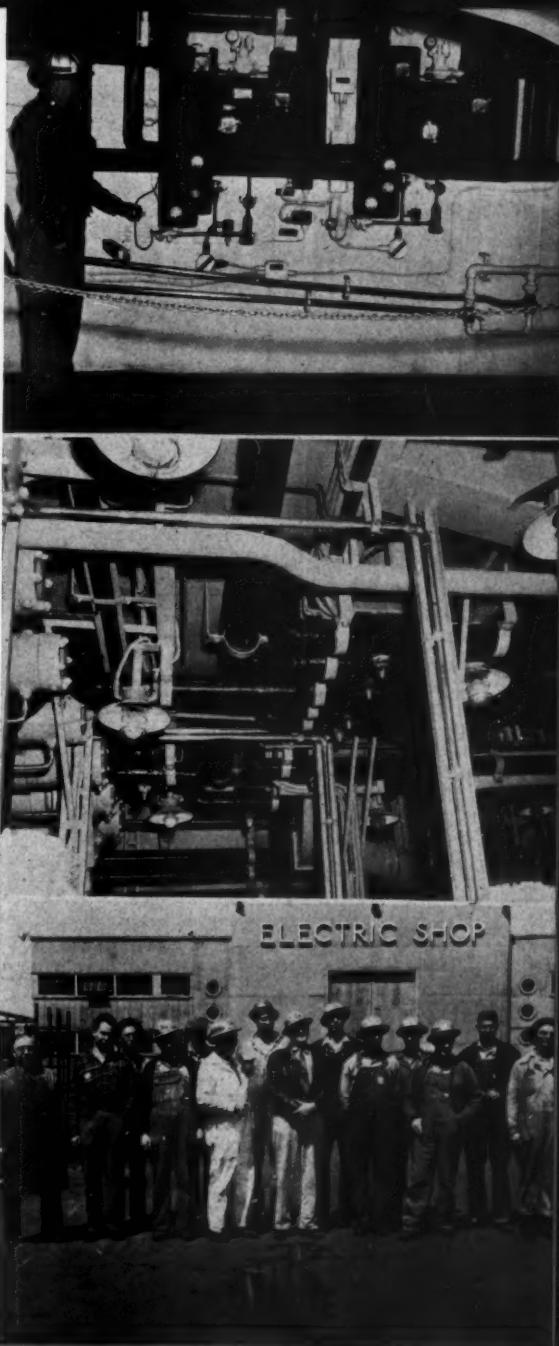
In upper right appears two of the nine suction and liquid line manifolds located just outside the refrigerated rooms in the hatch area galleries. Each liquid manifold is equipped with two expansion valves. One with an orifice for zero degree operation, and one for 35 degree operation. Each room is equipped with two room thermostats. One set to cut the liquid line solenoid out at zero degrees, the other to cut it out at 35 degrees. These thermostats can be changed by turning a switch in the compressor room. For zero degree temperature the pump operates through the bypass. For 35 degree temperature it operates through the constant pressure valve. The pipe coils are equipped for hot gas defrosting. The blower coils are equipped for hot water defrosting.

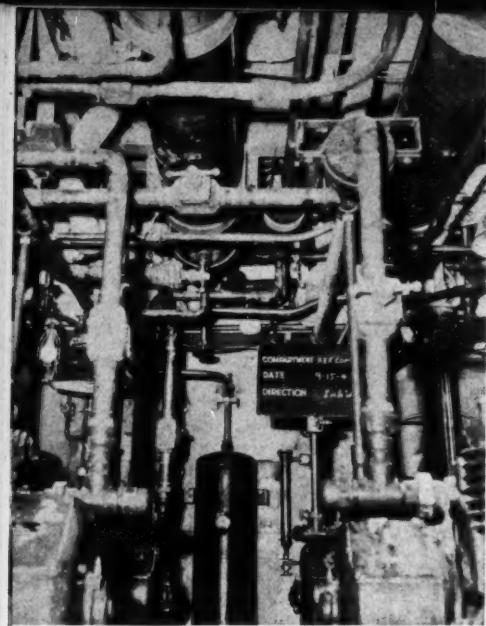
The discharge water from the condenser is diverted to a pump and is brought under pressure to the defrost piping over the coils. Since this water leaves the condenser at from 90 to 95 degrees it is very effective, and provides an ever available source of warm water. On shipboard sea water is used for cooling and is not re-circulated. The coils were electro-plated to resist the corrosive action of the salt water. Dick Carman appears again in this view.

Right center is another view of the overhead piping in the machinery room showing the "Freon" lines and part of the ventilating system.

Key personnel of Yard 3's Refrigeration Department is pictured at the right bottom. Del Carman, foreman, and Dick Carman, supt. are shown in center foreground.

Photos by Mrs. Terry Blakeslee





MARINE REFRIGERATION

(Continued from page 25)

supervised the installation of many cold storage and locker plants, ice cream plants, and other large commercial jobs.

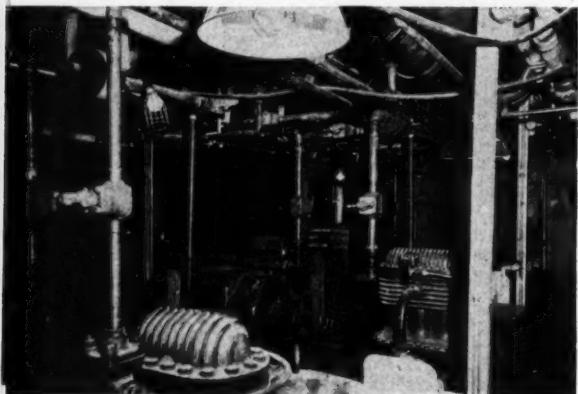
He is very optimistic about the future of Marine refrigeration. During the peak of war time operation he employed 120 men in his department. At present his crew is down to 40. While there may be further cutbacks in the near future, he expects to keep a sizable crew of qualified mechanics

busy for some time to come. The new ship construction program is just about complete, but there will be many large repair and reconversion jobs to be done in the next two or three years.

There were so many interesting facts brought out in my talk with Mr. Carman that it is difficult to decide which is the most important. One of the most revealing of these facts was his account of the relationship between the ship builders and the Governmental Agencies they did work for. Most of Yard 3's work was done for the Maritime Commission. People seem to have the idea that work done for the Government can be done just any old way and get by. Mr. Carman says that nothing could be further from the truth. The Maritime Commission's standards are the highest he has ever had to meet in all of his years at the business.

The Maritime Commission tests are carefully supervised by their inspectors and they are a pretty sharp bunch of guys. All of their installations, from the largest commercial plant to the smallest domestic unit, must be tested to hold $2\frac{1}{2}$ times the working pressure. In the case of "Freon 12" this would be 275 lbs. per sq. in. Each system must be completely evacuated and must hold a vacuum of 29 inches plus.

When the official tests are run only one man is allowed on the job with the inspector. No expansion valves or switches can be changed or re-set during the test. The units are pulled down from ambient temperature to operating temperature and held for 24 hours. Then all units are secured and a temperature rise, or insulation, test is held. This test lasts for six hours, and



The views on this and the next page show the machinery room for the troop refrigeration plant on the C-4 type Troopship. The pictures were taken while the job was still under construction. When all of the piping is covered and painted it makes a very neat looking job. However, these views give a good idea of the complicated nature of these medium sized Marine installations.

These six units, four 15 hp., and two 10 hp. York's, and the 2 ton ice maker, are in a room about 14'x20'. Every inch of space on the deck, bulkheads, and overhead, are utilized. (Walls, floors, and ceiling.)

Five of the units are on a load. One 15 hp. unit is a stand-by, and is cross-connected so that it can pull

a temperature rise of 2 degrees per hour is allowed.

In the three and one-half years that Yard 3 has been in operation Mr. Carman has supervised the installation work on 33 large transports of the C-4 class. Each of them capable of carrying about 4000 troops and a crew of 300. It takes a good sized refrigeration plant to preserve enough food for that many people on a long voyage. In addition he supervised the work on 5 Victory Troop Ships, 15 Landing Ship Tanks, 3 A.R.D.'s (Drydocks), 4 Refrigerated Cargo Ships of the C-4 Class, and more than 100 large repair and re-conversion jobs.

Mr. Carman was very firm in his insistence that full credit be given to the men who worked with him. His brother, Del Carman, has been his right hand man since the beginning. Del is another old-timer in the refrigeration business. He was with Kelvinator in Salt Lake City, Utah, for many years. Here is a brother team that really clicked. Del was in charge of most of the actual construction work, while Dick was busy with the organization and planning.

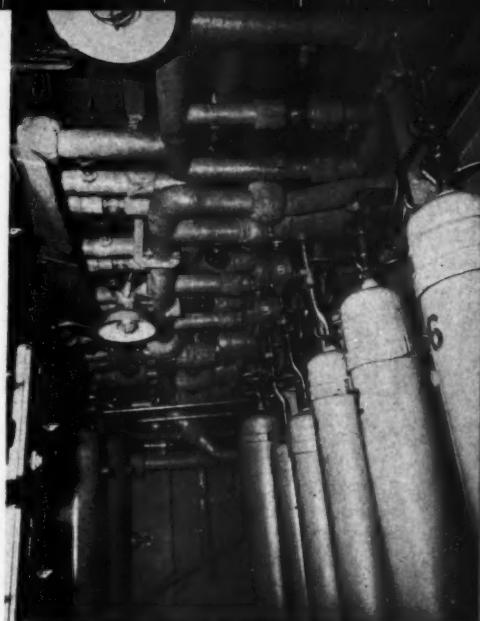
Another point on which Dick was insistant, was in stressing the opportunities in post-war Marine refrigeration. At no time was he able to hire enough trained men. Most of them had to be trained on the job. Since the labor turn-over, due to the draft and other factors, was very high, it was a difficult and discouraging job. By specializing the men, and placing them under competent supervisors, it was possible to get the work done. In many cases these supervisors were, themselves, specialists—trained in only one or two operations.

While it wouldn't be fair to say that cost

on any load. There is a fish room, 780 cu. ft.; thaw room, 1020 cu. ft.; poultry room, 1450 cu. ft.; butter and egg room, 1260 cu. ft.; milk room, 416 cu. ft.; meat room 5366 cu. ft.; frosted food room, 590 cu. ft.; vegetable room, 6132 cu. ft.; ice maker, 2000 lb. per 12 hours; and a water cooler 240 gallons.

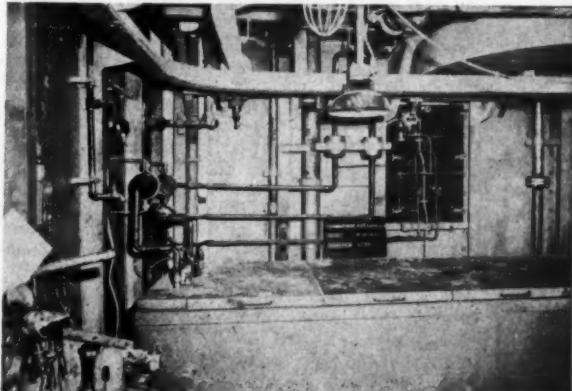
Upper right is a view of overhead piping in the converted troopship showing the circulating water hook-up to the condensers. Each condenser has its own water regulating valve, and also has a by-pass, to be used in case the valve has to be taken out for repairs. 8 of the 9 receivers are also shown in this picture.

Photos by Mrs. Terry Blakeslee



was no object, it was only due to the fact that costs were disregarded that they were able to get the job done with about 90% green men. They worked wonders with prefabrication and specialization. The boys in the shop developed a tubing bender that would bend hard drawn copper tubing up to 1 and five-eighths inches, cold and without loading. The Kaiser Co. had contracts for 33 large troop ships of the C-4 class. By using these methods they were able to cut the man-hours per ship by more than

(Continued on page 50)





By WAYLAN CLARKE

*"Breathes there a man with soul so dead
Who never to himself hath said,
'It pays to advertise?'"*

WITH apologies to the illustrious Mr. Scott, whom we have slightly misquoted, the question, rephrased, still remains: "Where is there a refrigeration service shop owner who, in normal times, can put a hermetic seal on his advertising yet expect to build a business for himself—much less keep in business at all?"

Among other things, there's one powerful little word that makes it necessary for most service shop owners to do something about advertising themselves. A good many fellows prefer to whisper the word, but we'll give it capital letters here—COMPETITION! In this country of ours, competition deserves capital letters; for it's the fighting stuff that has given our nation the edge over all the others when it comes to industrial progress and personal comforts, and when it comes to winning wars, too! So you might as well face competition—it's going to face you, sooner or later, weaker or stronger! And competition demands that you advertise.

With this little thought to munch over, let's consider another point about the need for advertising. It concerns a pretty old idea which a good many service shop owners still cling to and defend blindly as an argument against advertising. You've probably heard about it; it goes like this: "A satisfied customer is your best advertisement." Unfortunately, in the refrigeration service business, as well as in a good many other businesses, the saying has two big weaknesses: one, you can't have a satisfied

customer until you first have a customer (and how are you going to get a customer unless you advertise yourself?); and two, the average "satisfied" customer is only human. He's likely as not to forget all about you, much less pass on your name to his friends in their time of need. Once again, this calls for advertising. It's up to you to remind him and his friends from time to time that you are still in the business. Otherwise, he and his friends are just as good customers for your competitor as they are for you—and maybe better, if they happen to see your competitor's advertisement first.

Granted then that you are going to have to advertise? Now, *what* are you going to advertise?

A refrigeration service shop owner hardly considers himself a brilliant copy writer with a hundred and one advertising ideas for any occasion. Nor is he a topnotch commercial artist, or a market research analyst. If he were any or all of the three, he would probably be in the advertising business instead of refrigeration service. As a matter of fact, the service shop owner knows this much about himself: he can give quality service; he can give this service more or less promptly; and he can charge just about as much as the other fellow. And he knows one other thing—that he's got to get enough business to support himself and his family, and still make a profit, most of which he intends to put back into the business.

So he realizes he hasn't anything tricky like Pepso-dent's Irium to advertise, and he hasn't a chance to play up sex appeal because a leaky valve or a worn-out compressor just doesn't have the glamor it takes to attract the opposite sex.

In short, Mr. Service Shop Owner will have to face the facts—about all he can tell the public is that he knows the difference between the average refrigeration unit and a doughnut-making machine and that he's a pretty valuable man to have around when a refrigerator, commercial or domestic, begins to show symptoms of a disease. Boiled down, his advertising will likely feature these points—the economy of keeping a refrigerator running right (the periodic check-



There's not much sex appeal in refrigeration equipment.

up idea), the high quality of his work, the promptness with which he can make an emergency call, and the low (?) cost of the service job he does.

Of course, the refrigeration service man who has been bitten by the "sales-plus-service" bug may have a somewhat wider scope of advertising, a good deal of which is furnished by the manufacturer with whom he has contracted—but that's another story which you'll read about in a later issue.

Now comes the question, and it might prove to be the \$64.00 one, what *kind* of advertising should the service shop owner carry on? Is he going to place classified or display advertisements in his local newspaper? Is he going to mail a succession of post cards, letters, broadsides, and what-haves-you to potential users of his service? Is he going to put up a sign on his shop or (if he gets his wife's permission) is he going to set up his shingle on the front of his home? And how about his car or light truck? Will he have his company name and address designed in a snappy layout on the front door panel of his "family" automobile? Is he going to march up and down the street with a sandwich board over his shoulders and a flashy cigar in his mouth?

Before we jump into the various kinds of advertising he can do, there are a few preliminary matters that should be considered. One of these is pretty obvious, but there have been fellows who have overlooked it. It's the idea of getting a listing in the classified section of the local telephone directory. Certain classifications or headings are available at little, if any, cost, and it's smart business to take advantage of them. For instance, some directories offer such "standard" headings as: REFRIGERATION SERVICE OR REFRIGERATOR REPAIR, and others. There's one thing to remember about this type of advertising—unless a service shop owner is operating in a town of say less than two or three thousand population, the odds are that he will be sharing this telephone listing with one or more other hopeful shops. So even if his last name happens to begin with the letter "A" and he gets a



This kind of advertising might pay off for the local "hash house"—but the serviceman would think twice.

head-of-the-column listing, he would still be foolish to think that all of his advertising needs were satisfied.

Next, he probably wants to consider classified advertising in his local or community newspaper. This is basic advertising, too. An ad perhaps once a week, perhaps only three or four lines in length, will help to keep his shop before the public eye and **MAY** pay for itself. At least, it will do him some good—and the smaller the community in which he operates, the greater the value of this kind of advertising. There is no trick to preparing an advertisement of this sort: Here's a typical one:

Keep your refrigerator at top efficiency. Faulty operation means higher running costs. Prompt refrigeration service—commercial or domestic units. Call Bob S—Service, 618J—day or night.

In fact, you might call classified advertising in your local paper and in your local telephone directory the "peanut" stage. Thus far, the service shop owner who conducts this kind of advertising is doing so at little cost. But he mustn't forget that his competitors have thought of the same thing. Now what to do? It's time to do a little "pushing." His advertising is about ready to move out of the "peanuts" stage into bigger time—"black walnut" or "pecan" stage.

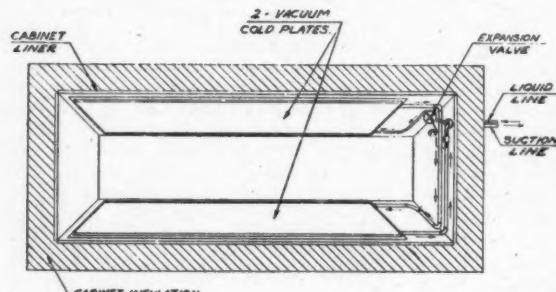
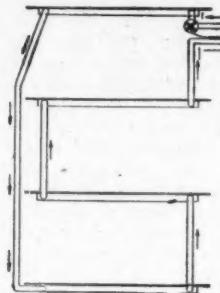
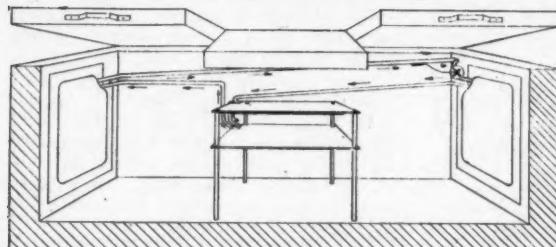
Here is the point at which the service shop owner must begin to use his head. What kind of advertising will prove best?

Should he run display advertising in his local newspaper—large type and illustrations? If so, how often should he schedule this kind of advertising—once a week, once a month, on Sundays, Holidays, or special occasions and special seasons? Should he start to use "direct-mail"—postcards and letters and circulars to new folks in the neighborhood, to old customers, to retail stores such as the grocer, the butcher, the delicatessen, the drug store? And how often should he "pepper away" at these people? While we're on the subject, from what source is he going to get his lists of names to whom he's going to write?

Yes, this is the "black walnut" stage of advertising—and these questions must be thought through and answered, but we'll talk about these matters in the next issue.

Meanwhile, think this one over—it applies to the open-minded gentleman who is willing to do something about something whether it be advertising, boarding his mother-in-law, or writing a letter to his Congressman. Here it is: Success comes in "cans," not in "can'ts."

Plate arrangements for home Freezers

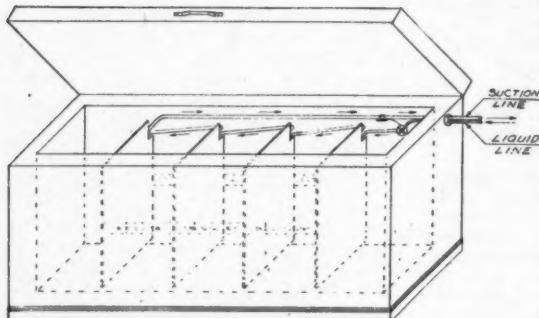


VERTICAL FREEZER

Above: The best method of hooking up plate shelves in a vertical home freezer, is to bring the liquid line into the top plate, and then drop the suction line to the bottom plate and work upwards.

CHEST WITH SHELVES

Left, top: In this chest-type home freezer a combination of vertical and horizontal plates is employed. The horizontal plates located in the center of the cabinet are intended for direct contact freezing of foods.



TWO PLATE CHEST

Center: Recommended location of expansion valve and refrigerant piping for a typical chest type home freezer employing two plates.

SECTIONAL CHEST

Bottom: Four vertical plate type evaporators are installed to make five compartments in a chest freezer.

AL SAWYER of Dole Refrigerating Co. presents in the above some of the various arrangements of refrigerated plates in home and farm freezers.

In discussing freezers he said that the present trend appears to be toward upright type units. These units present a problem in hooking up because "when the door is opened, the top plates take a beating."

The typical chest type freezer uses two

plates, one on each side flush with the sides. Air circulation would be improved if the plates were moved out an inch from the sides but this reduces storage space. Four inches of insulation is the minimum for two plates. If the insulation is less, plates should also be placed at each end. For the two plate hookup, the refrigerant should enter the bottom of one plate and leave the top of the other.

From Tool Kit and Garage to Thriving Business in Eight Years

By WILLIAM HENRY MORRISON

BACK in 1938 Harold J. Koch had an automobile and garage in the rear of his home in Cincinnati, Ohio where he lived. He also had a kit of tools and what is much more to the point, he had an idea. That idea was that a refrigeration service business based on real service would go over big in the Cincinnati area. He didn't have any capital at that time or as he puts it today "my capital was zero". But the lack of capital to invest in a business didn't cause Mr. Koch to think twice because he had the idea that hard work together with a fixed idea would lead on to success.

So on April 19, 1938, Mr. Koch started in business servicing commercial refrigeration and air conditioning equipment with his sole business assets consisting of his

From working alone in a garage work shop to employing 28 men in a 7000 sq. ft. downtown business establishment is a long trip, yet that is the record in eight years of this Cincinnati firm built on refrigeration service.

next six months and by the end of that period, just a year after Mr. Koch had started all alone, business had grown to such an extent that not only was it necessary to take on more men but also to seek larger quarters. The garage headquarters were far too small.

The garage had measured 9 feet by 18. The new quarters that Mr. Koch rented were downtown in contrast to his residential place of business and measured 70 feet by 18, quite a jump from the garage space. Two more men were added which gave the business a staff of four including Mr. Koch.

Business was continued in this rented downtown location until 1944 when business became so big that Mr. Koch went out and bought himself a modern business location, also downtown, at 1630 Walnut Street. This new location with modern building has 7,000 square feet of floor space, quite a jump from the garage beginning and the 70x18 rented quarters that served in between. The 20th Century Refrigeration Co. as the business is called, moved into the new quarters in 1944 and is located there today. By the time the firm moved into this new location it had 14 employees which number has grown since until at this writing there are 28 employees.

The business was started as an exclusive refrigeration and air conditioning service business which it continued to be until it moved into the Walnut Street location. There with more space to play with and with available space to make a display room that would beget business in the selling end, various distributorships were taken on



HAROLD J. KOCH

automobile and kit of tools with the garage for his place of business. For six months he worked alone, doing all the servicing work and gradually building up a future business.

At the end of six months business had grown to such an extent that he was forced to add another man to help him. These two, Mr. Koch and his helper worked for the



One corner of the repair shop.

as follows: Chrysler Airtemp Air Conditioning and Refrigeration, Servel, Inc. Compressors, Fogel Refrigerators, Temprite Water and Beverage Coolers, Iceberg Refrigerator Lockers, Southern Aircraft Cold Plate Beer Dispensers.

The firm had already built up an enviable reputation for service work. Now with these lines it set about to build up a reputation for merchandising, as well. It had been servicing refrigeration equipment in parts of the Cincinnati trading area but now with something to sell besides service, Mr. Koch decided to really go to town in what is known as the Cincinnati trading area. Cincinnati is located down in the southwestern corner of the State of Ohio which State is bounded on the west by the State of Indiana and on the South by the State of Kentucky. What is known as the Cincinnati trading area includes a portion of all three States. With distributorships for the above mentioned lines, Mr. Koch began to form a selling organization to cover 27 counties in this Cincinnati trading area, 8 counties in Ohio, 5 counties in Indiana and 14 counties in Kentucky. Today this firm has a group of traveling salesmen numbering six who continually cover these 27 counties seeking business from new clients and seeing to it that old ones remain satisfied with service rendered. Of these six salesmen, five work on all lines except the frozen food lockers

for which Mr. Koch has trained a special salesman. Whenever any of the other five salesmen obtain a prospect for frozen food lockers, that name is turned over to the salesman who does nothing but work on this line and he goes after the business as only an expert can go after business.

To properly handle this business there is a service department which is given preference because Mr. Koch is sold on the idea that selling is no better than the service offered the buyer. The sales department is divided into three sections, one devoted to commercial refrigeration, one to air conditioning and the third to frozen food lockers. In addition there is a complete engineering department for commercial refrigeration and air conditioning where layouts are made for prospective clients and customers. Then there is an installation department which takes care of all installations.

Some idea of the relative proportion of service and sales can be gained from these figures. Today service runs 20% of the gross business of the firm in dollars and cents with sales taking up the other 80%. The frozen food lockers are a new line which the firm has just taken on so their sales have been nil so far. Thus the above figures are based on sales and service of commercial refrigeration and air conditioning only. The gross business of equipment is divided between commercial refrigeration and air conditioning equipment as follows: Commercial



Part of the sales display maintained by 20th Century.

20th Century Refrigeration Co.

1630 WALNUT STREET

MAIN 1676

24 HOUR

18 Years
Experience



Commercial
and
Air
Conditioning

Chrysler Airtemp Air Conditioning — Servel Compressors
Complete Food Market Equipment

This advertising appears in trade papers, such as The Grocers Guide,
which reach potential users of refrigerating equipment.

refrigeration 55% and air conditioning equipment the other 45%.

Mr. Koch is a believer in continuous advertising and as a result he uses advertising in the yellow pages of the local telephone directory. Besides this he uses all three local newspapers, this advertising being of a classified nature. It has been Mr. Koch's experience that classified advertising in the local daily newspapers is most profitable. In addition this firm advertises in a number of local trade publications which reach definite prospects for refrigeration. Such a publication is the local grocers and meat dealers monthly official organ. Such publications have been productive of business because the readers are prospects for what this firm has to offer.

On top of all this, the firm maintains a mailing list with 10,000 names which includes customers and prospects. This mailing list covers the entire 27 counties covered by this firm and is a most complete list. Mailing pieces, mostly letters are sent out to the names on this list from time to time, depending on business in hand and conditions in general. It is the purpose of Mr. Koch to reach every name on the list at least once a year. Generally this number is increased.

Office details of the firm are most methodical. Every customer has made out for him what is termed a Users Card. This is a specially printed file card in the standard 4x6 inch size, printed horizontally. There is a space at the extreme upper left hand corner for the customer's name followed by his address. Following this is a space for the entrance of the length of guarantee given with the job. Below this is space for the date when the guarantee expires and the telephone number of the customer. The follow-

TEMPIRE
Beer Cooling Systems
1946 MODELS
IMMEDIATE DELIVERY
TOPS IN PERFORMANCE
LOW IN PRICE
20th Century Refrigeration Co.
MA 1676.
1630 WALNUT ST.

The type of advertising used by the firm in the classified section of the daily papers.

CALL NO.				
NAME	ZONE	REPEAT	<input type="checkbox"/>	
ADDRESS	APT.	TEL. NO.	<input type="checkbox"/>	
BILL TO	(NAME)	(ADDRESS)	<input type="checkbox"/>	
CUSTOMER'S REPORT			<input type="checkbox"/>	
INST. DATE	POLICY	<input type="checkbox"/> SALES <input type="checkbox"/> SERVICE	AUTHORIZED BY	<input type="checkbox"/>
RECD BY				
DATE	TIME RECEIVED	SERVICEMAN	PREV. CALL	SERVICEMAN

The service call slip made out in duplicate, the original of which is given to the serviceman handling the call. The yellow duplicate remains in the book for the office record.

ing three lines is for the entrance of data relative to equipment sold.

The lower half of the card is made up of three columns wherein is entered information relative to every service call made on that customer. Thus each users card becomes a record not only of the equipment sold to that customer but also of the service calls made.

In writing up these service calls on these users cards a new idea is used that works out very well. Service calls are given a compound number formed in a most novel way. The first portion of the service call number is any number from 1 to 12, the number standing for the month in which the call comes in. Thus calls that come in during April, for example will have as the first

USER	ADDRESS	WARRANTY			
INVOICE TO	EXPIRES				
ADDRESS	TELEPHONE				
COMPRESSOR	SERIAL NO.	EXP. VALVES			
CABINET	SERIAL NO.	COIL	BELT		
MOTOR	H.P.	CYCLE	VOLT	PHASE	INST. DATE

The users card which provides the service company with a record of each customer, the equipment sold the customer and the service calls made on the equipment.

Frozen Pastries Offer Good Field for Refrigeration Engineer

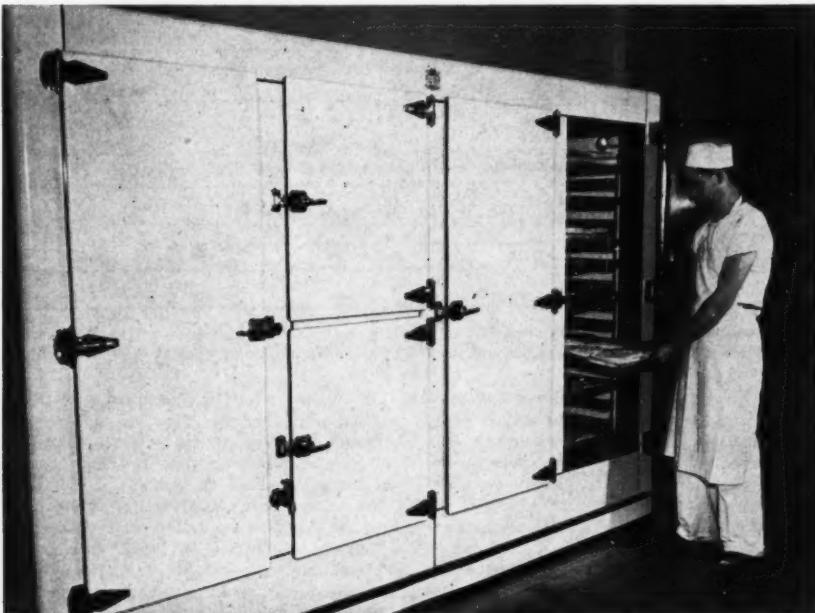
By ROBERT A. LATIMER

A SWIFTLY-GROWING field for commercial refrigeration, and one which demands "tailored to a purpose" equipment for the most part, is quick-frozen bakery products, according to National Refrigeration Company, St. Louis.

Frozen bakery products, which for the most part are bakery dough prepared as for oven use, and then sharp-frozen immediately, have been in the more or less experimental stage for the past five years. Only since 1945 have they been placed commercially on the market in the Middle West, and then only as "specialties" at rather expensive prices and in limited quantities. However, since early 1946, frozen bakery products are

springing up in frozen food stores, the bakeries themselves, and elsewhere. In each case, production of this new delicacy demands carefully designed refrigeration.

The advantages of quick-frozen bakery products, according to the St. Louis firm, are many. For one thing, the freezing of dough for Parkerhouse rolls, Dollar rolls, tea cakes, coffee cakes, Hot Cross buns, and even bread, has a real economical value for the small family. The childless couple, for example, who normally buy half a dozen rolls, or buns, for a dinner, or an entire loaf of Boston Brown bread, etc., usually throw away almost as much stale, unused items as they consume. Utilizing the quick-frozen



A five-door sharp freezing cabinet similar to the above, held at -40° F is used for freezing pastries.

dough, always ready for popping into the oven, does away with this waste. Another example which indicates that quick-frozen bakery doughs are slated for national popularity is "preparation for emergencies"—such occasions as when friends or relatives drop in on a Sunday or holiday when stores are closed. The housewife who has ready-to-thaw biscuit dough, pastry dough, etc., handy does not face embarrassing moments as a result. Most of these elements are being heavily played up by frozen food producers handling frozen bakery goods, such as the Pfeifer Pastries Bakery in St. Louis.

An Ideal Example of Future Markets

This St. Louis bakery is an ideal example of the future market for the refrigeration dealer, according to National Refrigeration Company, which sold and supplied the refrigeration currently used. Mr. and Mrs. Carl Pfeifer, owners of the bakery, went into the new quick-frozen bakery field in January of this year, after much experimentation. Feeling that the freezing of pastry doughs would provide an "extra market," rather than one which would compete with the established baked-pastry market, they studied every phase of the operation in advance. In the process, several refrigeration manufacturers and distributors were checked. Each, it was found, had various ideas on efficient sharp-freezing of a wet, paste composed material such as pastry dough. From their conclusions, the Pfeifer Pastry concern developed the initial step of the program. Then, they went to the Home Economics Department of the Union Electric Company, St. Louis, which had experimented with frozen foods, and tested a pie which had been kept at zero temperature for over a year. The pie was tasty and highly saleable—which was "all we had to know," according to the Pfeifers.

The St. Louis bakery went into the market by contracting with Boark Products, Inc., St. Louis frozen food retailers, who promised to take all output. Articles proposed for freezing were Parker House rolls, Dollar rolls, salad rolls, ice box cookies, french coffee cake, Betty Crocker cakes, Blueberry muffins, fruit pies, and even an ice-cream cake. These, the bakery mixes along standard lines, using, however, only premium ingredients since any less than top grades will "break down" under refrigeration, and demand too close supervision. Each is prepared and the dough placed in a bakery

"dough retarder" which is used as holding space until the dough is frozen.

At the outset, Mr. and Mrs. Pfeifer attempted to use a 16 cubic foot home freezer for the refrigeration job. However, inasmuch as this could provide only 15 degrees below zero temperatures, it took from two to eight hours to freeze the dough efficiently. Thus, production was limited and highly unsatisfactory. That was the case until National Refrigeration was called in.

Engineers of this company suggested immediately that the bakery set up a separate "refrigeration room" in which storage space, packaging tables, the sharp-freezer and possibly small refrigerators could be established. This, it was pointed out, would keep these bulky items out of the way of the bakers. Mr. and Mrs. Pfeifer heartily agreed with this. Going farther, National indicated that extremely low temperatures, capable of quick freezing any bakery dough within two hours would be ideal.

The result is an installation similar to that pictured—a 40 cubic foot, five-door enameled sharp-freezer, which operates a steady 40 degrees below zero. All doughs now come from the dough retarder, go into the huge box, are frozen and on the way in a refrigerated truck within two hours. Originally, a walk-in box was considered, but the idea was immediately discarded because the temperature changes might be hard on bakers' health.

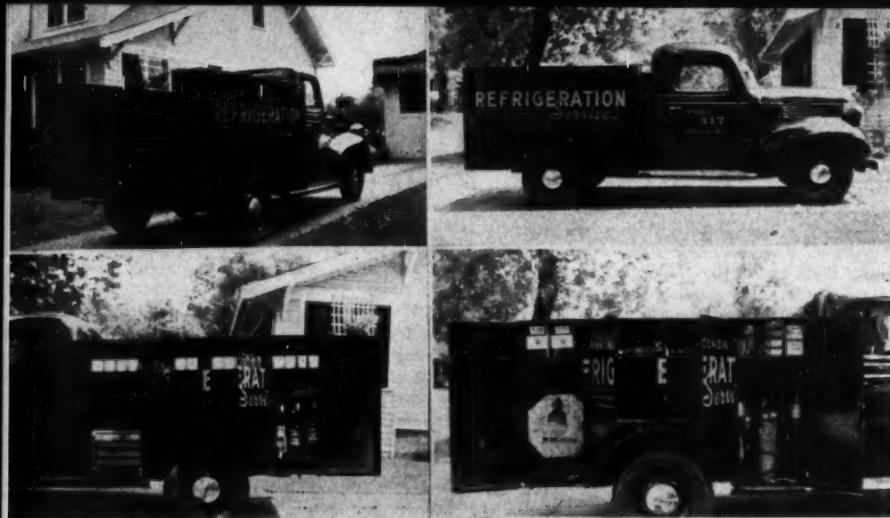
UNEXPLAINED REFRIGERATION

SCIENTISTS who have probed the mysteries of the atom, scratched their heads in vain at the Canadian Congress of Physicians in Toronto when confronted with a refrigeration device they could not explain. They were a lot happier when told its German inventor could not explain it either.

Shown to 100 delegates at the convention, the machine consists of a 30-inch length of pipe, with a small chamber about six inches from one end. Compressed air was forced in one end, and the other was covered with frost in a few seconds. There is no mechanism of any kind.

Professor Grayson Smith, of the University of Toronto, said he believed a whirlpool of air was created inside the chamber, and the cold air rushed to one end.

The device was found in Germany by an Allied investigating team which reported the inventor, named Hiltz, could not explain how it made cold air.



This is the truck that Harold built. It has the distinction, among other things, of being designed in Europe—built in the United States.

A G. I.'s "Service Shop on Wheels"

A GOOD service truck designed and built for the specific needs of the refrigeration serviceman is a good material saver, time saver, temper saver and, above all, is mighty good advertising for the services offered by the company.

Few men or companies have gone into designing and building special bodies for their service trucks, but Harold L. Hill of Janesville, Wis., is one of the exceptions. He planned his truck while serving with the 8th Air Force overseas and when he returned, he set to work to build it. Now he is the proud owner of the best looking truck in his territory. Here is his own story as told in a recent letter from him:

"While I was still over in England with the 8th Air Force we used to think a lot about home, about getting out, and about getting back into civilian life and into the old game again. Well, I started thinking about my old service business and what I was going to do when I got at it again, and I made up my mind to figure out and design a super-duper service truck. I had a panel truck before I went into the service and always thought I had a pretty good setup with a full line of parts and equipment in it, until it came to loading a large box or unit in it. Then I would always have

to stop and move everything around and squeeze it in. So I made up my mind that when I started all over again that I would have no more of that kind of monkey business. I would have a truck that would give me ideal space for my tools, equipment and parts, and also have a good full size loading space to carry large cabinets, units, etc.

"I put my dreaming and figuring on paper in the form of a sketch while I was over there and carried it all over with me until it was almost worn out. I didn't know then just when the H—I would ever get out to make it a realization, but I was going to be ready when the time did come. Well, I did finally get out after three years and got back into this country and expected to get out and make up for lost time and cash in on some of the big money I had been hearing about. But what a sad awakening I got. Along with all the rest who came back, I found out that it was almost impossible to buy a new truck, and that parts and equipment were very hard to get, and that everyone and his brother, it seemed, had started manufacturing home freezers. That was another of my dreams—to make a good line of freezers. So I had to forget a lot of my ambitious ideas and start in slow and try to build up my business again.

(Continued on page 52)

SERVICE POINTERS

Practical Solutions of Your Service Problems

THIS department is an aid to service engineers who are seeking new devices or methods to improve their work. All the service pointers have been supplied by the subscribers. THE REFRIGERATION SERVICE ENGINEER invites readers to submit "down-to-earth" practical service and installation information. Five dollars will be paid for each pointer published. Every service engineer has one or more "kinks" that have proved useful in every day practice. Here is your opportunity to exchange service pointers with the other fellow and earn \$5.00 for the information. Write up your idea today and mail it to the Service Pointer Editor.

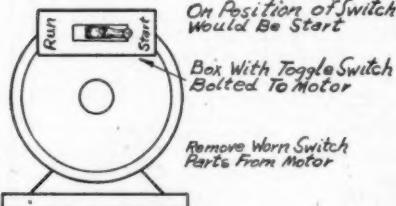
REPAIRING DEEP-FREEZE CONTROL

ADUAL well "Deep-Freeze" freezer cabinet with the Copeland semi-hermetic unit and the dual thermostatic elements tied in series at the control and attached around each body of the nonadjustable thermostatic expansion valve, had one element shorted to ground.

I removed the defective element, shorted the two leads, taped them and operated the unit. I dried the defective element carefully, tested for short with light and found it tested O.K. I then painted it with glythol and reinstalled.—Submitted by Herbert Kraft, New Braunfels, Texas.

USING WORN OUT MOTORS

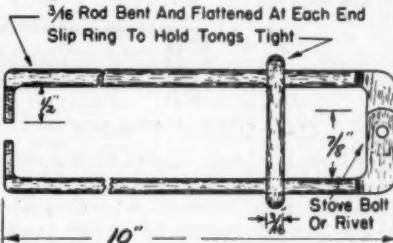
A split phase motor with a worn out starting switch can be made into a useful shop motor for use on emery wheels, buffers, etc., by mounting a manually operated switch on



the motor to shut off the starting winding. I have a number of motors equipped this way and they work very well.—Submitted by F. E. Oelinske, Green Bay, Wis.

SEAL RING TOOL

HERE is a tool that has saved me much time both in the field and in the shop. It is a tool for removing compressor shaft spacers and neoprene seal rings on shaft



seals. Every serviceman knows how obstinate they can become at times, especially when the shaft is coated with gum and paint.—Submitted by John W. Fox, Greensboro, N. C.

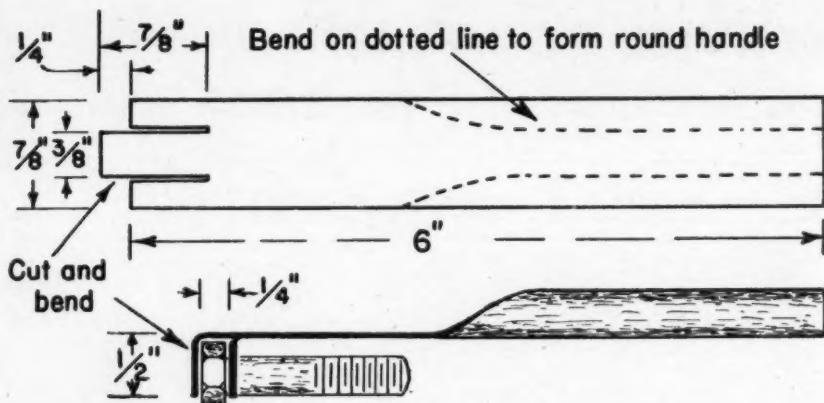
CLOSING STRIPPED VALVE

RECENTLY I was called to service a large condensing unit, the compressor discharge service valve of which was partly stripped of its threads, making it impossible to front-seat this service valve by the usual method.

I front-seated this valve securely by turning the valve stem as nearly closed as its remaining threads would permit, and then placing a piece of round steel, of the proper size and length, inside the valve seal cap, then screwing the cap in place on the valve, the piece of steel inside the cap contacting the end of the valve stem and forcing the valve to front-seat.—Submitted by Ralph Buell, Bentonville, Ark.

PLASTIC INDICATOR

WHEN liquid line indicators were not available I cut off a 4" length of transparent plastic tubing, put a flare nut on each end and made a cheap, effective and plentiful supply of excellent liquid line indicators. This worked out so well that I now use it on every job.—Submitted by R. Robinson, Brooklyn, N. Y.

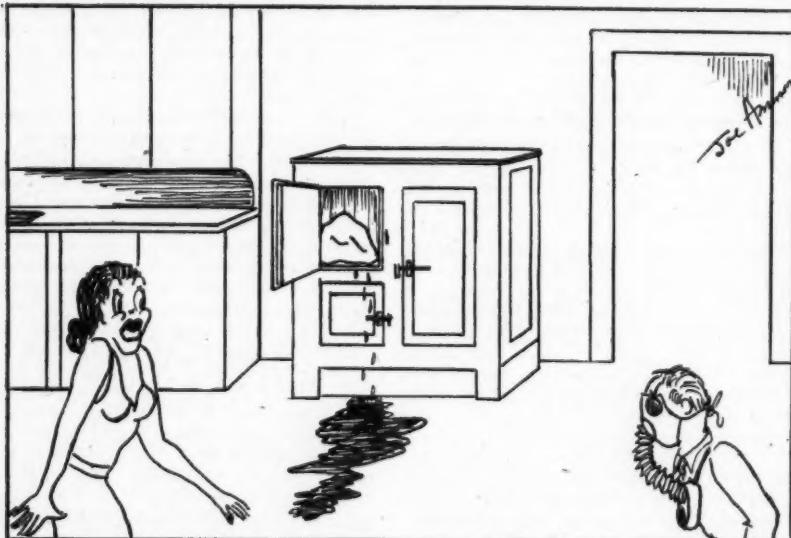


CAP SCREW HOLDER

HERE is a trick adapted from a rivet holding tool the old timers used to make to handle hot rivets. I use it to hold connecting rod bearing bolts while assembling the split bearing type rods to the shaft. It's as handy a tool as I know of. It has saved me a lot of time and skinned knuckles.

I've found that stainless steel sheet is the best. It stays rust free and has excellent "spring." Use 18 or 20 gage sheet material and cut to the dimensions shown in the illustration then bend as indicated, forming a round handle on one end and a three fingered holder for the bolt on the other end.
—Submitted by John W. Fox, Greensboro, N. C.

Oh! I'm sorry, I didn't quite understand what you meant when you said your refrigerator was leaking.



QUESTIONS AND ANSWERS

On Problems of Servicing, Installation and Maintenance of Household and Commercial Refrigerating Equipment—Send Your Problems to the Question Box.

COMMENT ON QUESTION 748

THIS refers to Question 748 "Cannot Find Leak." If there is a slight leak that cannot be found, I pump down the system, install a low and high side gauge, remove liquid line and suction line. Plug liquid line to TX valve and connect line from receiver valve to suction line. Open liquid line valve and allow refrigerant to pass through system. Then start unit and pump system up to 300 lbs. and check with leak detector. You are sure to find leak under this condition.

You also connect line from gauge to low side of compressor, open low side valve on gauge, then open high side of gauge slowly until you get a 60 lb. reading on low side. In that way you can check your complete system under pressure by pumping gas and air through suction line. After you locate the leak you discharge complete system and evacuate it. Install new dryer and recharge with fresh refrigerant.—*Nathan Fischer, Philadelphia, Pa.*

DIRECTION OF BELT

QUESTION 752: I would appreciate if you could give me some information about belts—if the belt has easier pulling in a counter-clockwise rotation or clockwise rotation, and why.

ANSWER: The direction of rotation has no effect on the ability of a V-belt to transmit power, provided all other conditions remain constant.

CHERRY-BURRELL FREEZER

QUESTION 753: Please explain what causes a Cherry-Burrell Ice Cream Freezer to flood. It is a Simplex model (Fr 40-A) using ammonia, with Alco type "TCS" thermal valve.

At times it gives no trouble and I can turn out a batch of 20 quarts in seven or eight minutes. It will operate this way four or five hours a day, then it will take as high as fifteen minutes per batch and the ice cream is poor. I frost back on the compressor, yet the back pressure on gauge shows only five or six lbs. When operating properly it shows fifteen lbs. back pressure. What causes this condition? I have changed the old Alco valve for a new one but still have the same trouble.

ANSWER: Frosting back of the suction line to the compressor in this case may not be a true indication of liquid in the suction line. The refrigeration system of the Cherry-Burrell Simplex Model Freezer consists of a heat interchanger, thermal expansion valve, a fixed passage for the refrigerant around the evaporator and a control bulb for the thermal valve in the suction line ahead of the heat interchanger. The Thermal valve is set to operate at approximately 3° superheat. The heat interchanger adds additional superheat to the returning gas.

With a compressor operating with five or six pounds low side pressure, which would mean a saturated ammonia temperature of 15 to 17° below zero, it would be impractical with a thermal expansion system to add sufficient superheat to the returning gas to bring that gas temperature above the freezing point. Under these conditions of compressor operation, the returning gas from the Simplex Freezer would be considerably below the freezing point. This low temperature gas will gradually cause the suction line to frost. The degree to which the suction line will frost will be largely determined by the length of the run and the humidity. Frost in this case does not indicate that the freezer is flooding back, nor should operation be affected.

It is also reported that the freezer may operate very satisfactorily for four or five hours a day, turning out a batch of ice cream in seven or eight minutes, and then drops off in capacity, taking as long as fifteen minutes to a batch. When trouble is experienced with slow freezing and it takes as much as fifteen minutes to freeze a batch of ice cream, it means that the thermal valve has failed to open or to feed sufficient amount of ammonia to the evaporator.

If the freezer has been operating satisfactorily for several hours before this condition is noted, it probably means that oil has congealed, or dirt and oil collected and blocked the small inside diameter discharge tube in the thermal expansion valve. The compressor oil should be checked by cooling a small sample of the oil in the hardening room to 20° below zero. The oil should remain fluid at this temperature.

The thermal valve may fail to open if

there is a slight accumulation of liquid ammonia in the suction line around the bulb, particularly if the thermal valve is set to operate at minimum superheat. The thermal valve on the Simplex Freezer should be adjusted so that at the start of operation some frost will form on the suction line for a distance of six to eight feet beyond the heat interchanger.

CHANGING REFRIGERANT

QUESTION 754: I have installed a Frickold refrigerator in my home. The original compressor and motor were taken off. A Model J SO² Kelvinator single cylinder compressor with a 1/4 hp. motor and a continuous 1/2" tube condenser is used as condenser and receiver. This unit is installed about 20 feet from the box in the basement.

The evaporator is made of 3/8" tubing. I have used 1/4" tubing for liquid line, 1/2" for suction line. The original SO² automatic expansion valve was used. I am using "F-12" for refrigerant. My trouble is short cycles.

Does the motor need to be speeded up? Should the automatic expansion valve be replaced with an "F-12" thermo? Is the liquid line too small or suction line too large? Do I need a check valve in suction line?

ANSWER: When you change a refrigerating system from SO² to "Freon-12" without also making a change in the speed, or any other mechanical change in the system, you increase the capacity of that system from one-third to one-half its original capacity. Usual result is that motor becomes overloaded and it will either not start or may overheat and perhaps burn out.

Ordinarily when making such a change it is necessary to reduce the speed of the compressor by at least one-third, or if additional capacity is required, the horsepower of the motor should be increased one-third.

Your present trouble of short cycling is undoubtedly caused by the large capacity of the present "Freon" system as compared to the requirements of the evaporator and refrigerator. If you intend keeping "F-12" in this unit it will be necessary to reduce the speed of the compressor or in some other way reduce the capacity of the unit.

REMOVING OIL

QUESTION 755: What is the best and quickest way to remove too much oil from a system? I had a compressor repaired and they put about a pint too much oil in it. I had a real problem for a while. I finally took the unit out and with CO₂ blew out the whole system. This was a household job. Is there a quicker way of doing it?

I have read and heard much discussion regarding a flooded evaporator. The best possible installation is to take the suction off the top, the inlet going to the bottom. I have installed one that I remember taking the suction off the bottom of the evaporator. What effect does this have on the system, the operation and performance of the system? It is a methyl system using a Mason T.E.V. valve.

ANSWER: The problem of removing the excess oil from a system will depend on the type of system. If it is an open type, oil can readily be removed by a suction pump to which is attached a piece of tubing. Remove the filler plug and take the oil out at this opening. If the system is a semi-hermetic, then oil can be removed by opening the discharge valve port and installing a copper tube through which the gas and oil can be pumped. This, of course, permits the gas to escape but does not require the system to be evacuated before being put back in operation.

Flooded evaporators are so designed that they do not have a continuous tube passage through them. It would, therefore, be very unsatisfactory to take the suction off of the bottom of the coil.

The reason for introducing the refrigerant at the top of a dry type coil is to assure all the oil being returned. If the bottom feed is used on this type coil a more completely flooded condition is supposed to exist. Bottom feeding will generally give less trouble with frost back on the suction line.

TESTING MOTORS

QUESTION 756: Would you be able to furnish me with a plan whereby I would be able to rig up a test bench for electric motors? I would like to be able to take a motor of any size, as 1/3, 1/4, 1/2-hp., etc., and set up a load of corresponding proportions, thus being able to check a motor to see if it will run properly without installing it on a job and then getting a service call from an irate customer.

For repairs I intend sending the motors to people specializing in this work, but for minor repairs I intend to do these myself.

Is this possible without taking a compressor of a size to match each motor? What I mean to have is a bench rigged up whereby any motor could be tested in a matter of minutes.

ANSWER: The usual device used for testing electric motors after repairs have been made; and in order to determine whether they operate properly under load, is what

is known as the prony brake. This is a simple device which you can make in your shop and would not require a test bench.

The prony brake shown in Fig. 1 is probably the most generally used. It requires a pulley, brake arm and scale (may be either platform scale or spring balance, if platform scale be sure that load is applied to center of platform, if spring balance is used the pull must always be at right angle to the brake arm, and in either case scale must have small enough variations to accurately read torque on smaller rated motors). Brake arm should be made up so that the distance between center of pulley and contact point where load is measured is exactly 12 inches. Scale reading will then be in pounds feet. Before starting test make sure that direction of rotation is

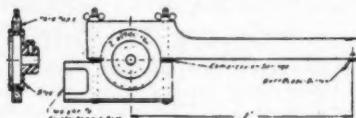


Figure 1

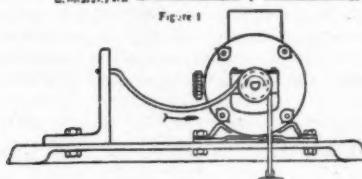


Figure 2

Two methods of constructing a prony brake for testing motors.

such that brake arm will be moved against balance. In order to measure starting torque clamp arm to pulley tight enough to allow pulley to turn very slowly—read scale when slowly turning. To measure pull in torque release brake clamp until motor is just able to pull up to speed. The true pull in torque is the highest scale reading for which the centrifugal switch inside the motor will operate.

The rope and weight method in Fig. 2 gives equally satisfactory results and yet does not require the equipment of the Prony Brake method. It requires a smooth face flanged iron pulley, rope and weight. Tie one end of the rope to the projection from the test bench so that the rope will be at 90° to the shaft. Wrap the rope around the pulley opposite to the pulley rotation and hang a weight on the free end of the rope. Wrap sufficient turns around the pulley so that the tied end of the rope will be slack when the weight is lifted and the pul-

ley rotates. To prevent the rope from gripping the pulley, oil or paraffin the rope slightly. Be sure that the hanging weight does not touch the floor or test bench. Some protective measures should be taken to prevent the weight from injuring the operator in case the rope grips too tight. Proceed to test as follows. Increase the weight until the motor will just start, then calculate as follows:

For example, to make starting test on a $\frac{1}{4}$ hp., 1725 RPM motor select a 4" pulley, $\frac{1}{4}$ " rope, and necessary weight. If assortment of graduated weights are not handy use bucket and sand (or shot) adding weight so that pulley is slowly turning.

Brake Arm =

$$\text{Pulley Dia. in inches} + \text{rope dia. in inches}$$

$$12 + 2$$

$$= \frac{4 + .125}{24} = .172 \text{ Ft.}$$

Starting Torque in Lb. Ft. = Brake Arm \times weight hung on rope = .172 \times weight.

Full Load Torque in Lb. Ft. =

$$\text{Full Load hp.} \times 5250$$

$$\text{Full Load RPM} \\ = \frac{25 \times 5250}{1725} = .76 \text{ Lb. Ft.}$$

Starting Torque in Percent of F. L. Torque =

$$\frac{\text{Starting Torque}}{\text{Full Load Torque}}$$

While both of these methods are widely used by small service organizations for checking test values on electric motors of all sizes, it should be specially noted that both methods do contain an element of danger to the operator, and should be used with extreme care from the standpoint of both safety to operator and accuracy of test results.

RULES 45 to 48 of the Water Supply regulations of the Dept. of Water Supply, New York, N. Y., specify that there shall be no installation of refrigeration or air conditioning requiring the use of water until a permit has been obtained.

Enforcement of this provision is expected to tighten in the near future.

NEW DEWPOINT RECORDER FOR REFRIGERATION SYSTEMS

A NEW electronic instrument known as a dewpoint recorder, which can determine automatically and continuously the amount of moisture in a gas has been developed by the General Electric Co. Oddly enough, it may make for better meats and vegetables. It is a versatile device, however, and works just as well in determining the amount of humidity in an air conditioning system, the amount of moisture in an aviator's supply of oxygen, and the amount of moisture in the hydrogen used to give steel a bright veneer in heat treating of the metal.

Able to measure in terms of absolute humidity in the air, the dewpoint recorder is an electronic combination of heater, refrigerator, mirror and gas chamber. As the gas chamber feeds a test gas out over a stainless steel mirror, the refrigerator and heater cool or heat the mirror until a temperature is attained at which moisture in the gas precipitates into dew on the mirror.

Keeping its "electric eye" on the mirror, the device spots the dew the moment it forms and simultaneously records this dew-point temperature on a graph or chart. Working in co-ordination, the refrigerator and heater hold this dewpoint temperature within a tolerance of two degrees, so that a continuous reading on the chart is available. The dewpoint temperature recorded is then converted into terms of the amount of moisture present in the gas tested, which has absorbed moisture from the air in the equipment where it is located.

Used in refrigerated meat packing houses, the recorder would aid in preventing meats from drying out. Furnishing a continuous reading of humidity in the storage space, the recorder would indicate whenever moisture in the air became so small that the air would begin to draw moisture from the meat. At that point the recorder would flash or sound a warning, or cause other control equipment to operate which would provide the air more moisture.

According to its designer, the dewpoint recorder would be a help in designing better refrigerators. Various fruits and vegetables are known to keep better under differing moisture conditions, and thus a means of regulating moisture in the various compartments of a refrigerator is desirable. In design of new equipment, or for testing purposes, the recorder would inform engineers as to whether control equipment is adequately regulating moisture.

SOLAR REFRIGERATOR

AMONG the most novel inventions yet developed in the Soviet Union is the solar refrigerator, which maintains subzero temperatures although outside heat is 98° F. in the shade. The refrigerating appliance consists of a solar boiler, of the type Federiko Molero developed, combined with an absorption refrigerator which has no moving parts, except a small pump to keep the ammonia solution in circulation through a series of hermetically sealed condensing chambers. This appliance can produce hot water and artificial ice at the same time, and is looked on as having great promise for the food industry.

Federiko Molero is a Spanish scientist now in the Soviet Union.

REFRIGERATOR SHIPMENTS

APRIL shipments of domestic mechanical refrigerators jumped to 148,000 units, a new high since V-J Day, and 34 percent above March shipments of 107,000 (revised). April shipments are still only 46 percent of the prewar rate. Delay in reaching full productive capacity is being caused by shortages of sheet steel, copper products, fractional horsepower motors, tin mill plate for condensers.

COPPER AND COPPER PRODUCTS

THE production of domestic primary refined copper has levelled off at a low plateau due to strike conditions in many of the operations. Output during April amounted to approximately 19,000 short tons compared to 20,000 tons in March, 50,000 tons in February, and 69,000 tons in January. Current production is running at about 25 percent of the rate in January when the mines, mills, smelters and refineries were in operation.

Approximately 10,600 tons of foreign refined copper were available in March and about 22,600 tons in April.

Because of extended strikes in the copper mines, the copper supply has become most critical. With the largest mining operations still closed down, American copper mines are yielding about 38 percent of normal production. In order to meet requirements it has been necessary to make withdrawals from Government stocks. On March 31, Government stocks amounted to approximately 444,000 short tons of which 109,000 were available for distribution; the remain-

ing 335,000 tons consisted of 162,000 short tons of fire-refined and 173,000 tons of electrolytic in process. Heavy withdrawals by industry have resulted in a shortage of certain copper shapes, notably wire bars and cakes. The stockpile now includes an undue proportion of fire-refined copper and an insufficient supply of the electrolytic types which is in greatest industrial demand. In order for wire mills to operate at the same rate as in the last quarter of 1945, approximately 50,000 tons of wire bars are required. Only 31,000 tons of wire bars were available for processing during April, and it is estimated that tonnage available during May will drop to 17,000 tons.

The seriousness of the situation is apparent from the fact that the entire electrical industry is dependent upon copper and copper products, such as magnet wire, coils, switches, and connectors. Copper is the heart of almost every electrical device. New production of most types of home appliances is in danger of being affected since copper is a vital component in the production of electric motors. The production of water tubing and wire, required in large quantities for the housing program, is being adversely affected by the shortage of copper.

NEW BOOK ON SERVICE BUSINESS

A NEW manual entitled "Establishing and Operating a Business in the Air Conditioning and Refrigeration Field" is being prepared and published by the Bureau of Foreign and Domestic Commerce, Washington, D. C. It is scheduled for distribution on July 1 and will be available through The Refrigeration Service Engineers Society, 438 N. Waller Ave., Chicago 44, Ill., at a cost of 35 cents.

The main purpose of this manual is to give those concerned, not a series of detailed instructions, but rather an overall, basic and comprehensive idea of the several divisions or groupings that have come about through normal trade practices within the industry. These several divisions or groupings are briefly described and the potential future of each indicated, so that those interested will after reading be in a better position to choose the particular division or group for which their inherent ability, past experience or future training will best qualify them, for such opportunities as may be available.

Some concept of the several opportunities for those properly qualified or who have

the necessary "know-how," may be gathered from studying the methods of operations for the several trade divisions or groupings as outlined and set forth in the chapters—on the manufacturing field;—on the distribution field;—on the appliance field (household and unitary equipment);—on the commercial refrigeration field (food store fixtures, etc.);—Servicing, household and commercial equipment;—Combination, sales and servicing organizations, and on "Contracting and Engineering Organizations" in connection with the sales, installation and servicing of the larger installations of equipment in the field.

For those who do not have the necessary "know-how," proper training or basic knowledge, particular attention is invited to the chapter wherein is outlined the training and educational facilities now available and just where such educational training may be obtained, as well as setting forth the financial aid now available under the G. I. Bill of Rights which is applicable for such educational and training activities at this time.

MOTOR MAKERS ASSISTED

FRACTIONAL horsepower a-c. motors have been classified as "critical products" by the Civilian Production Administration. Manufacturers of these motors are now eligible for assistance of a CC rating to procure production materials, production equipment and building materials which will facilitate increased output of these motors.

(Priorities Reg. 28, Schedule 1 as amended May 23, 1946.)

A.S.R.E. COMMITTEE NAMED TO ACCREDIT TECHNICAL INSTITUTES

FOR the purpose of establishing more uniform evaluation of technical institute curricula in the refrigeration field, the American Society of Refrigerating Engineers has appointed eight members of its Education Committee as regional coordinators to cooperate with the Engineering Council for Professional Development.

In making this announcement, Dr. Richard C. Jordan, Chairman of the A.S.R.E. Education Committee, called attention to the fact that a technical institute program is classed as one technical in nature but intermediate between high schools and vocational schools on the one side and engineering schools on the other. The purpose of such a program is to prepare individuals for positions auxiliary to those of engineering. Such curricula are



are dependable

The long-life trouble-free service of any A-P Refrigeration Valve is your first proof of A-P DEPENDABILITY.

The result . . . whether on original equipment or as a replacement is thoroughly satisfied customers for you, and a boost to your reputation as a refrigeration service engineer.

A-P DEPENDABILITY is no accident. A-P engineers know, before you get it, just what any one A-P valve will do and take extraordinary precautions to guarantee its dependable performance.

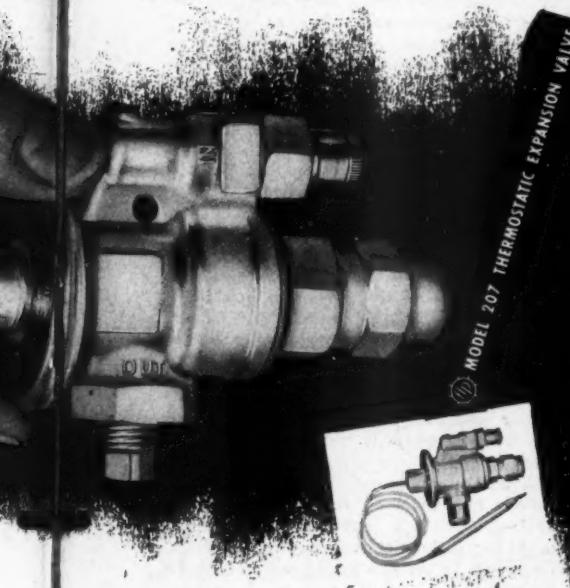
For instance, before A-P Expansion Valve diaphragms are made, a sample of the metal is tested the equivalent of 15 years' valve service. And that is *only* one of our many unusual "shop-proofs" of A-P DEPENDABILITY, done only to help you make more money with A-P DEPENDABLE Valves.

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Dependable
REFRIGERANT VALVES

AP SERVICE ENGINEERS



usually shorter and more intensive than collegiate engineering curricula, but do not include artisanship. A variety of educational institutions offer technical institute programs coming within the foregoing definitions.

The A.S.R.E. representatives, who are also appointed members of the E.C.P.D. Regional Accrediting Committee for Technical Curricula, are, in addition to Dr. Jordan of the University of Minnesota, Prof. A. L. Hessel-schwerdt, Massachusetts Institute of Technology; Dr. E. S. Ross, Sun Oil Company, Philadelphia; Warren W. Farr, President, Refrigeration Maintenance Corporation, Cleveland, Ohio; Prof. J. Mack Tucker, University of Tennessee; Prof. Byron E. Short, University of Texas; Homer J. Dana, State College of Washington, and J. C. Blair, Instructor, Frank C. Wiggins Trade School, Los Angeles, Calif., all of whom serve without compensation.

MARINE REFRIGERATION

(Continued from page 29)

50%. This reduction was accomplished before half of these 38 ships had been built. As they perfected their methods corresponding savings were made. These methods can only be effective where a large number of the same type of installation is to be made.

Now conditions have changed. Each ship will be an individual problem. Therefore, it is essential that the company, which will now be operating under competitive conditions, be able to hire fully qualified mechanics. While these Marine installations, of the type done in this shop, are not large from a tonnage standpoint, they are a complex and complicated job from an equipment standpoint. They go in for a number of medium sized units, rather than for one or two large units.

The 38 Troopships had for their troop refrigeration plant, four 15 hp. York, and two 10 hp. York units. There was another complete plant for the ship's stores. This also had a 15 hp. York unit. In addition there were 38 self-contained drinking fountains, 12 domestic boxes, 4 small salad boxes, 8 large reach-in boxes, and 8 ice cream serving cabinets. The installations they are now doing for post-war use are even larger since they have cargo refrigeration and more small units.

It is obvious that only the most highly skilled men will qualify for these jobs. However, Mr. Carman realizes that there will not be enough such men available. That

some on-the-job training will be necessary. He feels that anyone who is desirous of learning the trade in all of its branches would do well to investigate the opportunities offered in this field. It would be difficult to find a shop where a more diversified refrigeration experience could be obtained. It should be understood that this applies, not to this shop alone, but to the entire Marine refrigeration field.

The future of the ship building industry is not clear at the moment. Especially as far as new ship construction is concerned, but it is a known fact that there will be many jobs open in the ship repair and ship conversion field for several years to come. Nearly every ship operated by the United States will have to be converted from war time use to peace time trade. This means some big jobs. In some instances the re-fitting will cost as much as the original price of the vessel. Passenger liners, which were stripped for carrying troops, will have to be re-fitted. Then too, there will be some activity in the building of luxury liners for competition in world trade. Other countries will build bigger and better ships, and we will have to match them.

There are many jobs in the Marine field other than installation. Each ship that carries refrigerated cargo has an operating crew of four men. A chief operator, and an assistant for each watch. In common with all refrigeration equipment, ship plants are prone to break down and cause trouble. The operators have facilities for only minor repairs. So there are openings for service organizations who do this work. When a ship comes into port with refrigeration trouble, these jobs are plenty hot. Frequently the ship is to be in but a few hours and no time can be lost. It's working under pressure, but any Refrigeration Service Engineer worthy of the name will love it.

THRIVING BUSINESS

(Continued from page 37)

removal from the book. In actual use the yellow duplicate remains in the book but the white original is removed after being filled out.

After the service call comes in and the notations are made on the service call slip just mentioned, a Service Work Order is made out in triplicate. The original of this form goes to the accounting department for its use. The duplicate goes to the service file while the triplicate goes to the customer at the time the service job is completed.



EASIEST JOB
I EVER
INSTALLED

STANDARD

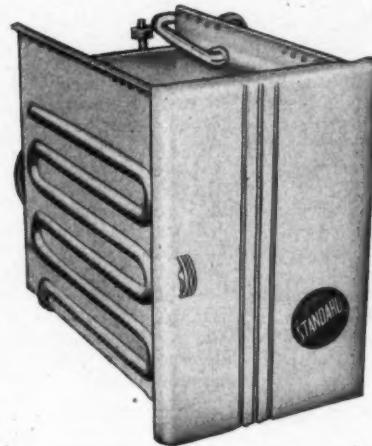
Model JS
Evaporator



IT SURE GOT
COLD
IN A HURRY



MY
CUSTOMER IS
SATISFIED



A COMPLETE LINE
OF HEAT TRANSFER
APPLIANCES



I PROFIT
MORE WITH
STANDARD
PRODUCTS

**YOUR REFRIGERATION SUPPLY
WHOLESALE HAS THEM**

Standard Refrigeration Company

20 North Wacker Drive

Chicago 6, Illinois

This Service Work Order as will be seen from the illustration has space for the entrance of materials used so it becomes a record form for the computation of the cost of the service call covered by that particular work order.

Hourly Rate Plus Commission

The shop is a union shop paying strictly union wages, based on an hourly scale. The shop is working on a year around basis but there is no guarantee of year around work.

Besides paying union wages, the firm pays a 5% commission to all service men on any business in new equipment that results from tips they turn in. The service men are not required to do any of the selling. All they do is turn in the tip and the sales force handles the prospect, the service men getting the 5% commission after the sale is made. Mr. Koch reports that this has worked out very well from both a company and a service man's angle because the service man is often in a very good position to report tips that a salesman might not uncover for some time.

The firm maintains a complete service shop capable of attending to all service needs except repairing and reconditioning of hermetic units and motors. Such jobs are sent to the manufacturer for repairs.

Exchange Service

In the case of motors, the firm maintains 65 service motors which it loans without cost to its customers while their motors are being repaired. Besides this the firm has 16 different type compressor bodies for service replacement. These compressor bodies are used as permanent replacements, the firm's price including the removal of the defective compressor body and the replacement of it by one of these service bodies. The compressor body that is taken out is then serviced by the firm or the manufacturer and goes into the service stock for use in some other customer's equipment when the occasion demands. On all servicing sent to the manufacturers, the customer is charged for the servicing plus the transportation.

Service is charged for according to a regularly established scale. There is a minimum charge of \$2.50 which charge includes fifteen minutes of productive work plus the travel. The first hour of a service call is charged for at \$4.00 with the hourly rate thereafter being \$2.50. All service work is done on an hourly basis, the firm having no maintenance contracts of any sort.

G.I.'s SERVICE SHOP (Continued from page 40)

"I did locate a used truck that I had to pay what I could have bought a new one for when I left. So I used that for a little over three months and did get by pretty well on service jobs, and sold a couple of new jobs that I was really fortunate in getting delivery on. Then a month ago I received my new Dodge pick-up. I bought it less rear fenders and started to work on my dream truck. I didn't want any calls for about a week then because I wanted to devote my full time to building the body. Well, I was always interrupted and would have to go on service calls so, consequently, it took me over three weeks to finish the job. But I finally did get it done and the pictures show views of it.

Like Working in Shop

"To me it is the last word in a service truck. It is like working in your shop—everything is separated and in its proper place at all times. I can lay my hand on any part or tool almost in the dark, without having to hunt through a lot of mixed-up stuff. And I can jump in the truck and go on any job without wondering if I will need this part, or had I better throw in this special set of sockets, or what have you.

"People around town here have seen me driving around with it in the different stages of construction, and were all wondering just what kind of a rig it was going to turn into. But now that I have it all finished and my signs on it they all stop to look the second time at it. It is something different than the usual run of truck and it makes them look.

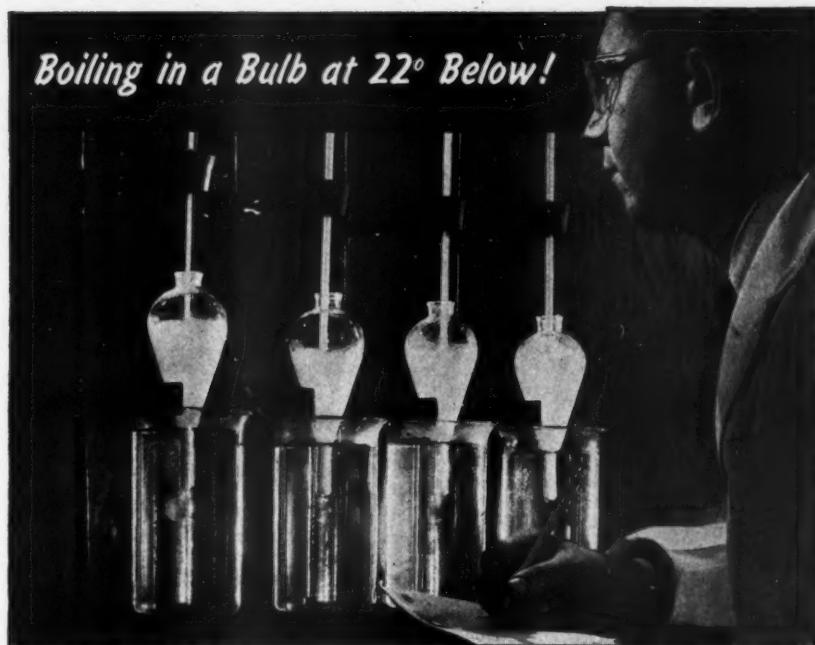
"So now I am really ready to give out with the very best in efficient, fast service, and when things do open up and get back towards normal, I think that I can really go to town."

XXX

LOCKER PLANT BREAKDOWN GIVEN IN SURVEY

SIXTY Iowa firms are set up exclusively as locker plants, and 105 more represent types of business in which refrigerated lockers are used, according to a survey presented by Paul E. Nelson, of the Iowa State College department of economics and sociology, at the Iowa Refrigerated Locker Association held May 28-24.

Boiling in a Bulb at 22° Below!



No 3-minute egg—this job! It's a boiling point determination test for "Freon" safe refrigerants—one of the many tests proving that each "Freon" production run meets rigid chemical and physical specifications. It guards against impurities, so that refrigerating equipment using "Freon" works better and lasts longer.

It's one more test of "Freon" assuring reduced risk of oxidation and corrosion within tubing, valves, and other finely machined parts. Freezing and blocking of capillary tubes in fractional horsepower units are reduced to a minimum when "Freon" safe refrigerants are employed.

The extreme purity of "Freon" . . . its

freedom from acids . . . its almost total freedom from insoluble gases and moisture (less than 25 parts in a million parts of "Freon") mean long-range economy to users. "Freon" refrigerants are also harmless . . . non-toxic, non-flammable, non-explosive.

For compact, safe, long-lasting refrigerating systems, check the advantages of "Freon" safe refrigerants. There's a "Freon" for every job, every temperature requirement. Write for complete technical data. Kinetic Chemicals, Inc., Tenth and Market Streets, Wilmington 98, Delaware.

IMPORTANT FEATURES OF "FREON" REFRIGERANTS

1. Freedom from moisture . . . less than 25 parts per million.
2. Narrow boiling point range—confined within limits of 1/2° C.
3. Less than 2% of insoluble gases in vapor phase.
4. Freedom from acids. There are none in "Freon."
5. Freedom from impurities . . . less than 1/20 of 1%.

KINETIC

FREON

REG. U. S. PAT. OFF.

safe refrigerants

"Freon" is Kinetic's registered trade mark
for its fluorine refrigerants and propellents.

142 EXHIBITS FOR EXPOSITION RESERVED TO DATE

THIRTY-SEVEN more exhibitors for the Fourth All-Industry Refrigeration and Air Conditioning Exposition to be held October 29 to November 1 in the Cleveland Public Auditorium were announced today by K. B. Thorndike, chairman of the two-association show committee sponsoring the event.

The new list brings the total number of exhibitors to 142 as of June 1. A previous announcement included 105 companies which are members of the Refrigeration Equipment Manufacturers Association and the Frozen Food Locker Manufacturers and Suppliers Association.

With four exhibition halls in the Cleveland auditorium used for the event, the number of displays is expected to exceed 300, covering 75,000 square feet of floor space. This will make the show, first conducted by the refrigeration and air conditioning industry in six years, by far the largest in the industry's history. The event is sponsored by REMA with the cooperation of the frozen food locker group.

The roster of exhibitors as of June 1 reveals practically all the "big name" makers of complete units in the industry, many manufacturers of specialized equipment, numerous makers of parts and chemicals and, in addition, producers of a varied line of products used in connection with refrigeration and air conditioning installations. In this last-named group are products such as insulation, frozen food wrapping and processing material, hardware and instruments.

New Exhibitors to June 1, 1946

Ace Ice Cream Cabinet Co.
Aircraft Service Co.
American Brass Co.
American Flange & Mfg. Co., Inc.
American Refrigerator & Machine, Inc.
R. H. Bishop Co.
Black, Sivalls & Bryson, Inc.
Bridgeport Thermostat Co.
Century Electric Co.
Chrysler Corp. (Airtemp Division)
Cushman & Denison Mfg. Co.
Drayer-Hanson, Inc.



K. B. Thorndike

Drierite Co.
Frozen Food Industry & Locker Plant Journal
General Engineering & Mfg. Co.
Highside Chemicals Co.
Jack & Heintz Precision Industries, Inc.
Kalamazoo Vegetable Parchment Co.
Kason Hardware Corp.
The Livar Corp.
Nevinger Mfg. Co., Inc.
Nickerson & Collins Co.
Pacific Manufacturing Corp.
Polar Hardware Co.
Ramsey-Bennett Co.
Redmond Co., Inc.
Refrigeration Appliances, Inc.
Refrigeration Publications, Inc.
Rockwell Mfg. Co. (Arcade Division)
Rogers Diesel & Aircraft Corp.
Sanitary Refrigerator Co.
Schnacke, Inc.
Tenney Engineering, Inc.
United Frigguator Engineers
Utilities Engineering Institute
Wabash Manufacturing Co.
Weber Showcase & Fixture Co., Inc.

SPRING MEETING OF ASRE

OVER four hundred members and guests were in attendance at the 33rd Spring meeting of the American Society of Refrigerating Engineers, which was held June 3-5 at St. Paul, Minn., with the Twin Cities Section of the Society acting as host.

President Charles S. Leopold presided at the opening session, and delivered the address of welcome at the general luncheon on Monday. Addressing himself to a theme familiar to those who have worked under Mr. Leopold in ASRE activities, he stressed the need of human factors in all societies, including the most scientific. In brief, he defined the aims of the members of the Society as: "To promote the arts and sciences of refrigeration, and to have good times doing it."

The papers presented, under the direction of Program Chairman, Dr. D. K. Tressler, noted food technologist, covered a wide variety of subjects of interest to air conditioning and refrigeration engineers. Among the subjects discussed were: A New Psychometric Chart, by D. D. Wile and E. P. Palimatier of the Carrier Corporation, which provoked considerable discussion; The Control of Micro-organisms in Food Storage Rooms, by Professor W. L. Mallman, Michigan State College; Technical Phases of Home Freezer Development, by C. E. Lund, Seeger-Sunbeam Co.; and Heat Flow Through a Complex Structure, by Professor Karl Kayan, Columbia University.

The Tuesday session was devoted to a symposium on air conditioning.

**For Efficient Refrigeration
Use Proved and Improved
Controls**

Here is efficient, unsurpassed refrigeration equipment. Specifically designed for the control of Freon, Sulphur-dioxide, Methyl-chloride and Ammonia. Also air, water, gas, light oil, etc. Suction lines or hi-pressure liquid lines.

K-15 and K-20 Series. Magnetic liquid and suction stops. The direct acting single seated needle valves and the piloted piston valves respectively. All valves are held open electrically, thus eliminating unnecessary compressor burdens. Tight shut-off for fractional tonnage installations. Features are Die-forged bodies, Hardened steel needles, Corrosion-proof internal parts, Gasketless construction, Integral mounting features, Moisture-proof high pressures. Single or dual voltage coils.

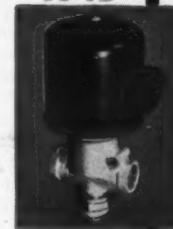
V-200 Thermal Expansion valve. Interchangeable Orifice Cartridges permit proper sizing on the job, making this literally six valves in one. Unmatched sensitivity, semi-liquid charged; may be placed in ambient temperatures higher or lower than bulb temperatures with no loss of control. Frictionless pusherpin, ample diaphragm, plus balanced, low-rate adjusting spring. Carefully lapped hard-faced ball insures tight shut-off.

Strainers S-5 Series. The importance of suitable strainers ahead of a flow control device, such as automatic or regulating valves of any kind for long operating life, cannot be too heavily stressed. Bronze, iron or semi-steel bodies, Monel, reinforced bronze or felt screens, 3/16 to 120 strainer meshes.

For complete specifications on these and other refrigerant controls in the broad General Controls line, write for the new 1946 Catalog 52C. Send request to your nearest Factory Branch, Distributor or Refrigeration Supply House.



K-15



K-20



V-200



S-5-2



S-5-3

SHIPMENTS OF REFRIGERATION AND AIR CONDITIONING

DURING the period January through June, 1945 the refrigerating and air conditioning industry shipped 97,742 units of unitary equipment with a value of \$31,733,866 according to the U.S. Bureau of the Census. In addition, 19,527 enclosures only (without units) were shipped, with a value of \$5,850,432 (Table I). Purchase of components for unitary equipment exclusive of enclosures were 71,642 units. Enclosures only totalled 5,660 units. The combined value made of components and enclosures was \$5,072,774. The report also shows that shipments of components and accessories for unitary equipment during the same period had a value of \$31,568,882.00 (Table II).

These statistics were compiled from reports made by 196 manufacturers, compared with 212 manufacturers included in the survey for 1944. This net decrease of 16 companies was caused by the exclusion of 33

TABLE I. SHIPMENT OF COMPLETE
UNITARY EQUIPMENT; SUMMARY BY
CLASS; JANUARY-JUNE, 1945

Product	Number	Value (Dollars)
Walk-in Coolers	3,160	3,244,941
Reach-in Refrigerators	17,947	5,586,159
Beverage Cooling and Dispensing Equipment	1,748	382,011
Display Cases	3,854	2,037,459
Soda Fountain equipment and ice cream cabinets	3,797	1,357,004
Soda fountain equipment	454	139,222
Ice cream hardening and dispensing cabinets and counter freezers	3,348	1,217,782
Frozen food cabinets	1,065	302,418
Farm and dairy milk coolers, mechanical	18,295	2,984,318
Drinking water coolers, mechanical and non-mechanical	40,816	5,118,595
Laboratory and industrial freezing equipment ¹	932	561,643
Ice making machines	1,670	2,388,167
Air conditioning units	4,458	3,468,166
Store type	3,997	8,314,160
Floor and window sill types	461	154,006
Absorption systems		4,352,985
Cold storage doors	7,352	1,418,290

¹Includes blood plasma cabinets, instrument treating cabinets, rivet coolers and cutting tool or spot welding coolers (coolant). No data were reported for cutting tool coolers (oil).

TABLE II. SHIPMENT OF COMPONENTS AND ACCESSORIES FOR EQUIPMENT

Product	Number	Value (Dollars)
Total	1 ¹	31,568,882
Condensing refrigerants	131,500	16,938,567
Ammonia refrigerants	965	1,550,786
Refrigerants except ammonia	180,535	15,387,781
Air cooled	120,180	10,490,167
Water cooled	10,355	4,897,614
Compressors and compressor units	51,876	3,697,969
Ammonia refrigerants	1,223	1,797,424
Refrigerants except ammonia	50,653	1,900,545
Centrifugal refrigerating machines	34	700,619
Heat exchanger equipment	1	10,226,727
Evaporative condensers	1,110	1,070,291
Unit coolers	39,356	4,100,945
Air conditioning	717	322,947
Refrigeration	38,639	3,777,998
Other heat exchanger equipment ²	1	5,055,491

¹Quantitative data for "other heat exchanger equipment" not available.

²Includes condensers and liquid coolers of shell and tube and shell and coil types, as well as fin coils (heating and cooling) and plate type evaporators.

manufacturers who were active in the air conditioning and commercial refrigeration equipment industry during 1944 but not during the period January through June, 1945 and by the addition of 17 manufacturers who reported no operations for 1944 but did report activity for 1945.

The companies included in this report accounted for more than 98 per cent of the total value of air conditioning and commercial refrigeration equipment shipped in the period January through June, 1945. For some products the coverage is lower than 98 per cent because of the large number of products on the reporting form, some of which are produced in only a few plants. However the coverage is at least 95 per cent for almost all products and probably does not fall below 90 per cent for any product.

The shipment statistics included in this report apply to equipment actually shipped and billed during the period January through June, 1945. These figures are equivalent to completed sales. Complete units or enclosures delivered on consignment or shipped to a branch warehouse for stock are not included.

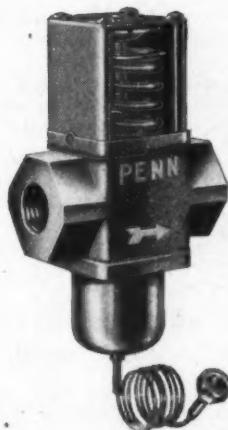


by Faulty Water Valve Operation

Skilled hands count little . . . when the installation of an ordinary water valve can imperil operation of a refrigeration or air conditioning system. Yet, it is so easy to be safe . . . with a PENN!

This new type water regulator gives you dependable, long life performance. For it is so designed, that range springs and sliding parts *never come in contact with water*. Rust, corrosion and sedimentation never get a chance to interfere with smooth operation.

Don't penalize your skill of installation with ordinary water valves. Install PENN . . . built in two styles—flanged and threaded—in a wide variety of sizes. Send for the descriptive bulletin on this new type water regulator today. Write *Penn Electric Switch Co., Goshen, Ind.* Export Division: 13 E. 40th Street, New York 16, U. S. A. In Canada: Penn Controls, Ltd., Toronto, Ont.



PENN



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

Refrigeration Service Engineers Society



Official Announcements of the activities of the International Society and Local Chapters appear in this department as well as articles pertaining to the educational work of the Society.

INTERNATIONAL HEADQUARTERS:
433-435 North Waller Ave., Chicago 44, Ill.

COMING CONVENTIONS

RSES Convention

Place: Hollenden Hotel.
City: Cleveland, Ohio.
Date: October 26, 27, 28, 29, 1946.
Secretary: H. T. McDermott, 433 N. Waller Ave., Chicago 44, Ill.

All Industry Exhibition:

Place: Cleveland Public Auditorium.
City: Cleveland, Ohio.
Date: October 28, 29, 30, 31, 1946.
Exec. Secretary: R. Kennedy Hanson, 1107 Clark Bldg., Pittsburgh, Pa.

Illinois State Association

Place: Stevens Hotel.
City: Chicago, Ill.
Date: September 21, 22, 1946.
Secretary: R. E. Saunders, 730 Towanda, R.F.D. 1, Bloomington, Illinois.

Alabama State Meeting

Place: Whitley Hotel.
City: Montgomery, Alabama.
Date: December 2, 3.
Secretary: W. C. Goodwin, 14 Country Club Drive, Montgomery, Alabama.

MEMBERSHIP DUES

Now Payable

Remit 1946-47 dues promptly to your local chapter or if a member at large send remittance direct to the International Office to avoid any interruption in your membership services.

Paper is still critical and only sufficient material is printed monthly to provide for the members in good standing.

Back copies of educational material or The Refrigeration Service Engineer will not be available. Remit promptly to avoid disappointment.

TWIN CITIES ANNUAL PICNIC

THE sixth annual picnic of the Twin Cities Chapter will be held July 21 at Bass Lake as in former years, with an expected attendance of well over 600. The original date of July 14 has been changed to July 21.

The shores of Bass Lake, where a dance pavilion and both open and sheltered picnic tables are available, are particularly well suited to the large gathering expected to attend this picnic. Last year about 600 were in attendance and the number is expected to increase this year.



Two views taken at last year's affair which will provide some idea of what one can expect at the widely acclaimed Twin Cities picnics.

Members of both the chapter and the Ladies Auxiliary are leaving nothing undone which could possibly add to the enjoyment of the attendance. Arrangements have been made for a loud speaker system on the grounds and the chapter's own ice cream freezer will be there working to capacity.

All's Quiet - TROUBLE IS GONE!

When You Use

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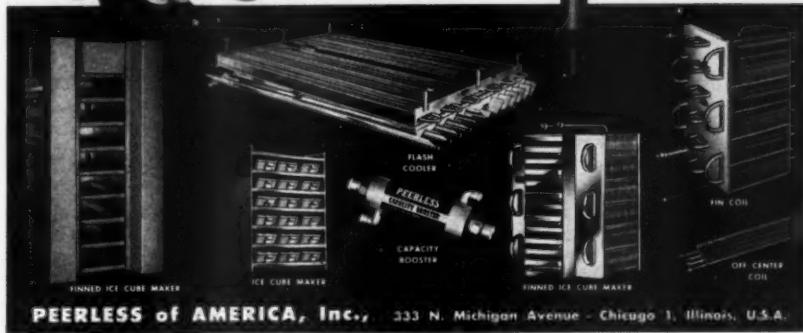
EXPANSION VALVES



With PEERLESS VL "Velvet Action" Expansion Valves in the vital control spot of a refrigeration system, breakdowns due to jerky valve movements, with resultant over-feeding and under-feeding, are eliminated. Steady, even control is maintained by PEERLESS VL Valves because of sound basic design, careful manufacture, and highest grade materials—all proven in performance. The satisfaction obtained with PEERLESS Expansion Valves is duplicated in all other PEERLESS products. For performance, it's PEERLESS!

SOLD THROUGH LEADING REFRIGERATION SUPPLY WHOLESALERS

One of the many superior features of these valves is the dependable PEERLESS Orifice Cartridge which accurately measures and governs the flow of refrigerant. Four sizes for adjustment to capacity range. Send for folder showing details of valve construction.



PEERLESS of AMERICA, Inc., 333 N. Michigan Avenue - Chicago 1, Illinois, U.S.A.



The Azalea City Chapter held a dinner at the Admiral Semmes Hotel, Mobile, Alabama, on Saturday evening, May 25th, for the purpose of presenting the charter to the chapter. Approximately eighty-seven members and guests attended. J. M. Manley, President of the Montgomery Chapter presented the charter to C. R. Pettus, President of Azalea Chapter, and then made a brief address in which he stressed the aims of the RSES and the importance of the service the refrigeration service engineer can and should render to the community. He then presented membership certificates and cards to the active members present and letters to the junior members.

Those appearing in the lower picture, left to right are: Top row, J. A. Robertson, Secretary; D. P. Breland; L. R. Maddox; H. A. Summersgill; E. Allman; W. B. Jones, Jr.; J. S. Donald. Second row, C. G. Robinson; W. L. Henderson; F. G. Jackson; J. R. Quinlivan; F. D. Crowe; T. O. Cooper; M. T. Harris; A. D. Johnson, Jr.; G. A. Lamb. Bottom row, P. C. Clements, 2nd Vice-Pres.; L. M. Founds; H. C. Bates; R. L. Murray; C. R. Pettus, President; G. M. Elliott, Treasurer; W. L. Anderson, 1st Vice-Pres.; L. McMullan, Sgt-At-Arms; P. J. Alfaro.

It is expected that at least 50 gallons of ice cream will be distributed free, as well as all the coffee they can drink. The usual Minneapolis-St. Paul kittenball contest will be held and there will be a variety of races and contests for boys and girls and the grown-ups, with many prizes. Prize drawings and dancing in the pavilion will top off the day.

The picnic committee responsible for all the well thought out arrangements of this outing are: Mr. and Mrs. Dean Holmes, Entertainment; Mr. and Mrs. Mahnke, Ice Cream; Mr. and Mrs. Palen, Publicity-Tickets; Mr. and Mrs. Gene Coulter, Coffee Com-

mittee; Mr. and Mrs. Norman Sulenes, Prize Committee and Finance; Mr. and Mrs. Glen Schwarting, Coffee; Mr. and Mrs. Ubert Hanson, Ice Cream; Mr. Harry Schaeffer, Grounds Police; Mr. and Mrs. Edward Asperoth, Signs and Ticket Taking; Mr. and Mrs. Alex Andrews and Mr. and Mrs. George Pegg, Games.

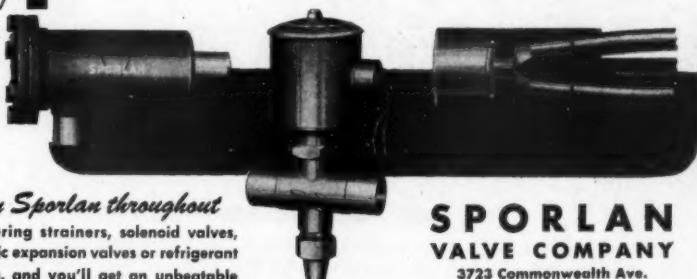
The annual ball game will get under way early in the day. Arrive early and join the rooting section of your favorite team. Races and contests for the very young and those who feel young will be in the afternoon. Grand Prize drawings in the evening.

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Only Sporlan offers you thermostatic expansion valves with selective charges... each to do a specific job. So don't just ask your wholesaler for a valve... ask him for a Sporlan valve, selectively charged to give you peak performance on any size installation.



Specify Sporlan throughout
when ordering strainers, solenoid valves,
thermostatic expansion valves or refrigerant
distributors, and you'll get an unbeatable
combination of perfect performers!

ILLINOIS ASSN. RSES BOARD MEETS TO PLAN CONVENTION

THE officers and board of directors of the Illinois Association RSES met at LaSalle, Illinois, on June 28th to outline the plans for the association's 9th annual convention. Arrangements are completed with the Stevens Hotel, Chicago, for holding the convention on September 21 and 22. The Chicago Chapter has reserved 100 rooms for these dates.

Several unique features for the program and entertainment are under consideration by the board. W. C. (Bill) Metcalf, president of the Illinois Association, has revealed enough of the program at the present time to indicate a really interesting and educational two-day meeting.

With Fred H. Stevens, President of Chicago Chapter, in charge of his committees (and doing much of the work himself), the Chicago Chapter assures all members of the Illinois Association a grand time and fitting preliminary warm-up to the All Industry Convention in October.

Plan now to attend
RSES Annual Convention
All Industry Exposition
Cleveland, Ohio, Oct. 26-29
RSES Headquarters
Hollenden Hotel

UTAH AGGIE RECEIVES CHARTER

DINNER and installation of officers for the Utah Aggie Chapter was held May 22nd on the campus of Utah State Agricultural College. Entertainment by Professor Mortimer was both sleight of hand tricks and mathematical solutions to various equations which all boiled down to $1 = 2$ or $2 = 1$.

Formal installation meeting consisted of usual opening exercises after which the meeting was turned over to J. L. Driskell. In his talk he mentioned that this was the first college to receive a charter from the RSES. He stressed the opportunity to develop good fellowship. Mr. Driskell pointed out how the industry is interested in developing skillful and reliable servicemen. He then swore the members in and presented the chapter charter. President Daniels received the charter and voiced the chapter's appreciation for receiving it. President Craner of the Salt Lake Chapter gave a short talk of congratulations. Dean Clyde expressed appreciation for the school and then gave some good advice on how to prepare for business, in which he said, "Prepare yourself to be an authority in your chosen field"; "We should keep our eyes on the stars"; and "You only grow by overcoming difficulties."

The pictures "Two Temperature Controls" and "Pressure Actuated Controls" were shown and discussed after which the guests were invited to see and inspect the laboratory facilities of the refrigeration department of the school.



UTAH AGGIE CHAPTER INSTALLATION OF OFFICERS DINNER MEETING

Seated—left to right are: J. F. Craner, president Beehive Chapter; Dewey Clyde, dean School of Engrg. and Industry; W. L. Wanlass, Acting president U.S.A. College; Roy Dahl, Jr., M.C. and chapter sgt-at-arms; J. L. Driskell, National RSES Director; E. C. Jeppsen, director Industrial division; J. C. Sharp, chapter secy. and treas., head of Engrg. dept. Standing: Lavell Whatcott, Beehive Chapter; Ernie Greetham, Beehive Chapter; R. Hansen, Beehive Chapter; Deverl Payne; Roy Larson, Ellison Keen; Max Webster; Ira Allen; Ward Jensen; Ken Rasmussen; Ferris Daniels, president Utah Aggie Chapter; Jack Scott; Dewey Williamson; Roscoe Black; William Mortimer, professor of entertainment; O. L. Grimaud.



NU-COIL REFRIGERATOR COIL CLEANER

No objectionable odor
Utmost in labor saving
Can be used over repeatedly
Often imitated
Is practical—quick acting
Let your wholesaler
EXPLAIN . . . NOW

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Educational Sound Films

Schedule of Showings

UNDER the supervision of the International Educational Committee, a set of 16 sound films, grouped into 12 showings and accompanied by a set of slides, are being circulated among chapters as a part of their educational program. Films are all of a practical nature on servicing refrigerating systems. Titles of the films and their identifying numbers and the schedule of showings are listed.

Film Titles and Key Numbers

No.	TITLE
360	Principles of Refrigeration
438	Checking The System—Part I
439	Checking The System—Part II
440	Locating and Repairing Leaks
441	Adding or Removing Refrigerant
442	Removing and Installing A Compressor or Condenser
443	Removing and Installing A Cooling Unit
444	Adjusting and Checking The Expansion Valve
445	Checking and Replacing A Float Valve
446	Checking The Electrical System
447	Quieting A Noisy Refrigerator
448	Adjusting and Repairing The Thermo-Expansion Valve
451	Servicing Water Cooled Condensers
449	Adjusting Pressure Actuated Temperature Controls
450	Adjusting Commercial Thermostatic Controls
452	Making and Repairing Tubing Connections

SCHEDULE OF SHOWINGS

AKRON, OHIO—Akron Chapter: Aug. 14—No. 449-450. Contact F. J. Roller, 357 S. Maple St., Akron 3, Ohio.

AURORA-ELGIN-JOLIET, ILL.—Tri-County Chapter: July 20—No. 442. Contact William J. McCarley, 607 N. Center St., Joliet, Ill.

BATON ROUGE, LA.—Louisiana Chapter: Aug. 2—No. 443. Contact E. A. Summer, 3867 N. 33rd St., Baton Rouge 5, La.

BIRMINGHAM, ALA.—Birmingham Chapter: July 17—No. 360. Contact C. S. Tucker, 2405 12th Ave. N., Birmingham, Ala.

BLOOMINGTON, ILL.—Corn Belt Chapter: Aug. 14—No. 360. Contact Harold Mason, 306 W. Wood St., Bloomington, Ill.

CHARLESTON, W. VA.—Charleston Chapter: Aug. 13—No. 442. Contact H. G. Frame, 1105 Washington St. W., Charleston 2, W. Va.

CHICAGO, ILL.—Chicago Chapter: Aug. 13—No. 444. Contact D. D. Orr, 332 S. Hoyne Ave., Chicago, Ill.

COLUMBUS, OHIO—Columbus Chapter: Aug. 14—No. 444. Contact H. Grossman, 22 W. Naughton St., Columbus, Ohio.

DAVENPORT, IOWA—Mississippi Valley Chapter: Aug. 6—No. 442. Contact J. Vinje, 529 W. Second St., Davenport, Iowa.

DAYTON, OHIO—Dayton Chapter: Aug. 8—No. 445. Contact R. E. Warner, % Allied Supply Co., 359 W. Monument Ave., Dayton, Ohio.

DENVER, COLO.—Mile High Chapter: July 15—No. 443. Contact R. C. Kimmel, 1524 15th St., Denver 17, Colo.

DUBUQUE, IOWA—Key City Chapter: Aug. 7—No. 444. Contact R. E. Mueller, Stampfer Farm & Home Store, 7th and Iowa, Dubuque, Iowa.

DULUTH, MINN.—Head of the Lakes Chapter: Aug. 5—No. 360. Contact C. A. McCafferty, 7 N. 20th Ave. W., Duluth, Minn.

EVANSVILLE, IND.—Evansville Chapter: July 25—No. 442. Contact C. E. Goad, 11 Main St., Evansville, Ind.

FORT WORTH, TEXAS—Cow Town Chapter: Aug. 8—No. 442. Contact P. D. Cato, Texas Refn. Supply Co., 1410 Commerce St., Fort Worth, Texas.

FRESNO, CALIF.—Fresno Chapter: Aug. 8—No. 438-439. Contact N. N. Leas, % Cond. Air & Refn. Co., 249 N. H St., Fresno 3, Calif.

GRAND RAPIDS, MICH.—Furniture City Chapter: Aug. 6—No. 444. Contact M. D. Thiebaut, % Consumers Power Co., 450 Market, S.W., Grand Rapids, Mich.

HUNTINGTON, W. VA.—Tri State Chapter: Aug. 13—No. 443. Contact A. W. Albertsen, 314 Eleventh St., Huntington 14, W. Va.

KANSAS CITY, MO.—Kansas City Chapter: Aug. 7—No. 445. Contact C. R. Visger, 7715 Brooklyn, Kansas City, Mo.

LA CROSSE, WIS.—La Crosse Chapter: Aug. 8—No. 446. Contact George Bernstein, 408 Copeland Ave., LaCrosse, Wis.

LANSING, MICH.—Wolverine Chapter: July 22—No. 444. R. Kellogg, 616 Jessop Ave., Lansing, Mich.

LIMA, OHIO—Lima Chapter: July 18—No. 438-439. Aug. 15—No. 440-441. Contact Allied Supply Co., Attn. Dan Shively, 122 S. Union St., Lima, Ohio.

LOGAN, UTAH—Utah Aggie Chapter: Aug. 7—No. 360. Contact J. Cecil Sharp, % Utah State Agricultural College, Logan, Utah.

LONG BEACH, CALIF.—Long Beach Chapter: Aug. 14—No. 440-441. Contact Van's Supply, 250 E. 12th St., Long Beach, Calif.

LOS ANGELES, CALIF.—Los Angeles Chapter: July 31—No. 438-439. Contact Merle F. Stutzman, 3464 W. First St., Los Angeles 4, Calif.

LOUISVILLE, KY.—Colonels Chapter: July 18—No. 444. Aug. 15—No. 445. Contact J. M. Berry, % F. H. Lagsenkamp Co., 339 W. Main St., Louisville 2, Ky.

MADISON, WIS.—Madison Chapter: Aug. 8—No. 446. Contact Ref. Maintenance Corp. 731 University Ave., Madison 5, Wis.

MIAMI, FLA.—Greater Miami Chapter: July 25—No. 438-439. Contact Orville W. Brown, 1044 N. W. 65th St., Miami 38, Fla.

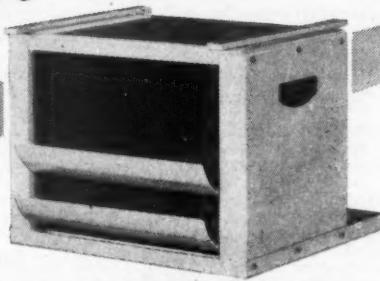
MONTEREY, CALIF.—Monterey County Chapter: Aug. 14—No. 360. Contact Robert Hall, % Tide Electric Co., 500 Del Monte Ave., Monterey, Calif.

MONTGOMERY, ALA.—Montgomery Chapter: July 15—No. 442. Contact W. C. Goodwin, 8 Forest Ave., Montgomery, Ala.

NEW HAVEN, CONN.—Elm City Chapter: Aug. 2—No. 443. Contact T. B. Howell, United Illuminating Co., 221 George St., New Haven, Conn.

OMAHA, NEBR.—Missouri Valley Chapter: No meeting July and August. Contact C. M. Flohr, % United Motors Serv., 27th Ave. and Harney St., Omaha, Nebr.

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- New exclusive Betz coil construction
- Guaranteed ratings
- Built-in air distributor
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- Built-in efficiency loop
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- Slotted hangers for easy installations
- Complete range of capacities

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HAMMOND, INDIANA

PEORIA, ILL.—Illinois Valley Chapter: Aug. 9—No. 440-441. Contact Bryson Roth, 300 South Washington St., Peoria, Ill.

PORTLAND, ORE.—Multnomah Chapter: July 18—No. 360. Aug. 15—No. 438-439. Contact Wayne C. Miller, % Minneapolis Honeywell Regulator Co., 122 N.E. Broadway, Portland, Ore.

READING, PA.—Reading Chapter: July 16—No. 440-441. Contact O. A. Larson, % Larson Supply Co., 328 Buttonwood St., Reading, Pa.

ROCKFORD, ILL.—Rockford Chapter: July 15—No. 444. Contact L. L. Sturch, 1915 Vernon St., Rockford, Ill.

SACRAMENTO, CALIF.—Sacramento Valley Chapter: Aug. 1—No. 440-441. Contact George M. Baie, % Assoc. Refr. & Equip. Co., 1717 Eye St., Sacramento 14, Calif.

ST. PETERSBURG, FLA.—Sunshine City Chapter: Aug. 6—No. 438-439. Contact R. B. Schroeder, Florida Power Corp., St. Petersburg 1, Fla.

SALT LAKE CITY, UTAH—Beehive Chapter: July 25—No. 443. Contact W. W. Walker, % G. E. Supply Corp., 310 W. 2nd South St., Salt Lake City, Utah.

SAN DIEGO, CALIF.—San Diego Chapter: July 18—No. 438-439. Aug. 15—No. 448-451. Contact C. E. Anderson, 209 West E St., San Diego 1, Calif.

SAN FRANCISCO, CALIF.—Golden Gate Chapter: July 25—No. 360. Contact Ray Winther Co., Attn. George N. Eskra, 1245 Folsom St., San Francisco 3, Calif.

SANTA ANA, CALIF.—Orange County Chapter: Aug. 21—No. 360. Contact R. L. McCain, 615 E. Bishop St., Santa Ana, Calif.

SCRANTON, PA.—Scranton Chapter: August 7—No. 452. Contact W. D. Franklin, 1632 Sanderson Ave., Scranton 9, Pa.

SPRINGFIELD, MASS.—Western Massachusetts Chapter: July 23—No. 440-441. Contact Harold C. Lambert, Room 449, 31 Elm St., Springfield 3, Mass.

TOLEDO, OHIO—Greater Toledo Chapter: Aug. 14—No. 438-439. Contact Paul D. Sizer, P. O. Box 69, 1216 Adams St., Toledo, Ohio.

TULSA, OKLA.—Oil Capital Chapter: July 31—No. 444. Contact R. W. Palmer, 820 E. 3rd St., Tulsa 3, Okla.

WATERLOO, IOWA—Cedar Valley Chapter: July 24—No. 443. Contact J. Adams, % Herbert Refr., 710 Lafayette St., Waterloo, Iowa.

WILKES-BARRE, PA.—Wyoming Valley Chapter: Aug. 12—No. 448-451. Contact A. Reese, 104 Slocum St., Forty Fort, Pa.

Chapters in the Making

• CANTON, OHIO—A meeting was held June 19th in Canton, Ohio, for the purpose of considering the formation of a chapter there. A name has not yet been chosen but a decision to organize has been reached.

• PENSACOLA, FLORIDA—A petition for charter has been made to the International Society under which a chapter can be formed in Pensacola, Florida, to be known as the Pensacola Chapter. The petition is dated June 5th, with twenty-five men of the Pensacola area signing it.

• MEDINA, OHIO—At a meeting held in Medina, Ohio, in the early part of May, a

group of refrigeration servicemen of the area considered the advisability of forming a chapter of the Refrigeration Service Engineers Society in that area. Temporary officers were elected as follows: LeRoy Perkins, Chairman; Ralph Mills, Secretary and Treasurer; Essmer Blosser, Educational Director. Applications for membership were filled out by a large number of those in attendance and sixteen signed a petition for charter. The new chapter is to be known as Medina Chapter with headquarters in Medina, Ohio.

• POMONA, CALIF.—The tenth chapter in the State of California was formed during the month of May and formal application made for a charter. The new chapter, located in Pomona, Calif., is to be known as Old Baldy Chapter. Petition is signed by twenty-six members.

• LIMA, OHIO, CHAPTER—Presentation of the Lima Ohio Chapter charter was made June 20th by Warren W. Farr, International Director. The first in the series of educational films provided by the International Society appeared on the educational program.

• JOPLIN, MISSOURI—Organizational meetings have been held in Joplin, Mo. recently for the purpose of forming a chapter in that city. Forty-two members have been accepted to membership to date with the prospect of more before formal application is made.

R.S.E.S. Chapter Notes

• CHARLESTON CHAPTER, *Charleston, W. Va., June 11*—The charter for Charleston Chapter was presented by Acting International President Clarence Buschkopf. The meeting got under way with the serving of a dinner at 7 P.M. which was a huge success. The table was lavishly decorated, the food good, plentiful, and all members enjoyed themselves to the fullest extent. Harry G. Frame called the meeting to order after dinner and a brief business session was held. Mr. Buschkopf gave a brief talk on benefits through membership in the Society, then presented the charter to Mr. Frame. Following the presentation Claude Brunton gave individual certificates of membership and membership cards to all present.

After the presentation, Al Snyder, local magician and practitioner of legerdemain, gave a mystifying exhibition of magic. One of the sleight-of-hand tricks performed by Mr. Snyder was the pulling out of thin atmosphere a tumbler of Scotch, which Mr. Brunton, himself a magician, caused to disappear. The balance of the evening was spent in the discussion of refrigeration problems, general conversation and a few scattered hands of poker.

• CLEVELAND CHAPTER, *Cleveland, O., May 14*—Educational Chairman Bob Whitney introduced the guests of the evening, Austin Jones, member of the Toledo Chapter and affiliated with Kerotest Mfg. Co.; Al Meva of Automatic Products Company; and the speaker of the evening, Sol Smith of Johns-Manville Co. Mr. Smith gave a very interest-

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AUDELS REFRIGERATION and AIR CONDITIONING GUIDE

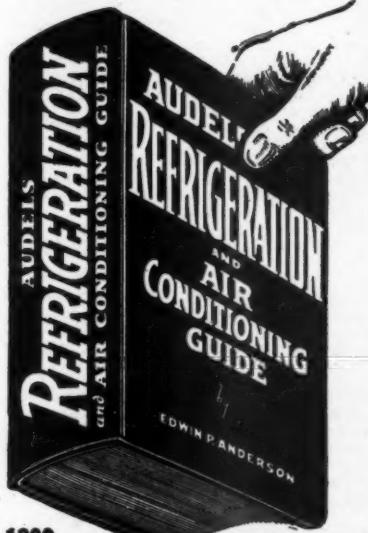
"AUDELS REFRIGERATION & AIR CONDITIONING GUIDE." 4 Books in One covering the basic principles, servicing, operation and repair.

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2. SPECIAL REFRIGERATION UNITS
3. COMMERCIAL & INDUSTRIAL REFRIGERATION
4. AIR CONDITIONING SYSTEMS

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for ENGINEERS, SERVICEMEN, SHOPMEN AND USERS. A good book is a good friend! Here you will have at your fingers' ends a complete library in ONE VOLUME, the necessary data you have been looking for on: MODERN UNITS, SYSTEMS AND MACHINES, REFRIGERANTS, including Freon, Quick Freezing, Lockers, Water Coolers and Air Conditioning Systems. 1280 pages, 46 chapters all fully illustrated and indexed for ready reference and answers to your questions. Size 4 1/4 x 6 1/2 x 1 1/4. Flexible covers.

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- Audels SHEET METAL WORKERS Handy Book** 2.
- Audels SHEET METAL PATTERN LAYOUTS** 2.
- Audels AIRCRAFT WORKER** 2.
- Audels MATHEMATICS and CALCULATIONS** 2.
- Audels MACHINISTS & TOOLMAKERS Handy Book** 4.
- Audels DIESEL ENGINE MANUAL** 2.
- Audels MECHANICAL ENGINEER** 4.
- Audels AUTOMOTIVE GUIDE** 2.
- Audels MARINE ENGINEERS Handy Book** 2.
- Audels SHIPFITTERS Handy Book** 2.
- Geeths MECHANICAL DRAWING COURSE** 2.
- Rogers DRAWING and DESIGN** 2.
- Audels MILLWRIGHTS and Mechanics Guide** 4.
- Audels CARPENTERS and Builders Guides (4 vols.)** 6.
- Audels PLUMBERS and Sanitarians Guides (4 vols.)** 6.
- Audels PLASTERERS and Painters Guides (4 vols.)** 6.
- Master PAINTER and DECORATOR** 2.
- Audels GARDENERS & GROWERS GUIDES (4 vols.)** 6.
- Audels ENGINEERS and Mechanics Guides Nos. 1, 2, 3, 4, 5, 6, 7 and 8 complete** 12.
- Audels Answers on Practical ENGINEERING** 2.
- Hawkins Aids to ENGINEERS EXAMINATION** 2.
- Audels WIRING DIAGRAMS** 1.
- Audels HANDBOOK of PRACTICAL ELECTRICITY** 2.
- Audels ELECTRICAL POWER CALCULATIONS** 2.
- Hawkins ELECTRICAL Guides at \$1. each** 10.
- Audels ELECTRONIC DEVICES** 2.
- Audels ELECTRIC Dictionary** 2.
- Audels RADIOMAN'S GUIDE** 2.
- Audels NEW ELECTRIC LIBRARY at \$1.50 a Volume** 12.

Name _____

Address _____

Occupation _____

Employed by _____

R 12



In the upper picture are a group of charter members who attended the charter presentation meeting April 1, of the Head of the Lakes Chapter in Duluth, Minn. They are left to right: back row, Roy Hammerstedt, Vice-Pres.; Einar Sohlstrom; Wm. Draxton; C. Roland Ely; Russell Ames; Len Hedin; C. M. McCafferty. Middle row, Kenneth Draner; Wm. Larsen, Treas.; Fred Strom; M. Johnson; Les Erickson; E. G. Swanson; Wm. Hoover; Walter Swanson; Geo. Winters; Ted Noyes. Front row, Herbert Stott; Edw. Luck; Robt. Rooney, President; E. Honkanen, Secy.; Burton Routh; B. Tubbs; Robert G. Bell. In the lower picture is the group of Twin Cities Chapter members in attendance. They are left to right: Back row, John Taylor; Don E. Frank; E. A. Baldwin; U. P. Hanson, John Weiner; M. A. Chadwick. Front row: Art Palen; Clarence Buschkopf, Acting International President; Dean Holmes, Chapter President.

ing talk accompanied by the showing of motion pictures on insulation and the importance of vapor seal. The talk was followed by a lengthy period of questions and answers.

Al Fenwick reported progress on the revision of the refrigeration code. Eight new members were accepted to membership in the chapter and it was suggested that the chapter draw up its own constitution and by-laws.

● **COW TOWN CHAPTER, Fort Worth, Texas, June 13**—Ed Ketchum reported on progress of the city code, quoting the opinion of Lee Larson, City Engineer, to the effect that now is a poor time to introduce a new code because materials, unavailable at the present time, would make the code impossible to enforce. The annual election of officers resulted in the following: Howard Lee, President; Jack Hommel, Vice-president; Garland Boyd, Secy-Treas.; C. M. Black, Sergeant-At-Arms. Directors, Ed Ketchum, Chairman; J. E. Carpenter; A. M. Johnson. Educational Chairman, Paul Cato.

● **ELM CITY CHAPTER, New Haven, Conn., June**—Here are the minutes of the June meeting as reported by Les Harris, Publicity Chairman of the Chapter:

"Installation Nite (forget the business ya dopes its Officers we mean) and the retiring Pres. Art Murphy called the meeting to order. Reports were read and accepted; altho the treasurer's report was accepted a bit grudgingly after it became known he had just received a new car. Heck! More power to you, Pal, for doing a very swell job. How we had to pry to get any money from him this past year.

"Pres. Murphy called the new officers and the sergeant-at-arms escorted them individually to the rostrum where they were charged with the duties of the new offices. The new servants of our chapter are: Raymond H. Clouet, President; William Paine, 1st Vice-president; Thomas Howell, 2nd Vice-president; Joseph Berg, Treasurer (good luck Joe); Ralph Rice, Secretary; Fred Montesanto, Sergeant-At-Arms. Chairman Educational Committee—Les Harris. Board of Directors—Arthur Murphy, Lee Wallace and John Bendel. The new president having been seated called for a rising vote of thanks which was promptly rendered for the fine job done by the retiring officers. Much progress seems to have been made in the past year in spite of its pitfalls and the splendid interest that was shown in helping to get the New England chapters off to a flying start in the new Association, was worthy of their fine efforts.

"The Entertainment Committee took over and ran off some fine films. They were the RSES film 'Checking the System' and two telephone pictures, 'The Telephone Hour' and another depicting the development of the modern coaxial cable in trunk line communications, how it is made and scenes showing its underground installation across our country. Cries for 'Gypsy Rose' to the contrary the education did us all a lot of good. But say, who is the Ham with the 'small' hammer who tape those valves so-o-o lightly?

"The usual swell refreshments with 'the mustard in the middle and the pickle on top' concluded the evening.

"P.S. My evening ended after two flat tires were fixed so at least I got home early even if it was the next day."

● **FAIRFIELD COUNTY CHAPTER, Fairfield County, Conn., June 10**—Following the business meeting, Don Kimber, local representative of Handy & Harman, and A. W. Swift, of the same firm, but of New York, demonstrated two of their company's products, Sil-Fos and Easy-Flo. Refreshments were served after the demonstration.

New officers elected at the May 13th meeting are: Bernard Packtor, President; Earl Walters, Treasurer; Richard Chase, 1st Vice-president; Earl Wilcox, 2nd Vice-president; Harvey W. Lockwood, Secretary.

● **FOX RIVER VALLEY CHAPTER, Fond du Lac, Wis., June 5**—Application for junior membership was received from Albert Schmidt, and it was reported by the nominating committee that election of officers would be held at the next meeting. On the educational program E. K. Wegner led a discussion on capacitor motors and provided an interest-



HERE'S WHY

This sensational new TENNEY Valve has a supersensitive power element located directly in the suction line and which responds instantly to both temperature and pressure conditions. Control is designed into the Valve itself. No external equalizer is needed. Pressure drop in the evaporator or distributor is automatically compensated.

FIRST MAJOR IMPROVEMENT IN EXPANSION VALVE DESIGN IN 20 YEARS

Developed during the war for operation on stratosphere and other low temperature equipment, this Valve is the answer to a long-felt need.

Completely eliminates bothersome and complicated "charges" and "cross-charges" for operation in a specific temperature range. Each Valve will operate over the range of $\frac{1}{4}$ ton to

$1\frac{1}{2}$ tons capacity and closes above a definite evaporative pressure without the use of cartridges or other auxiliary equipment.

OPERATES IN ANY POSITION

No special positioning of the Valve is necessary. Simply hook it into the lines wherever wanted—vertically, horizontally or upside down—a big convenience when using the Valve in confined space.

Other Features of this Outstanding Valve:

Instant response to suction vapor conditions—Extremely close super heat control—No push pin packing required—Complete absence of time lag in control—Only one valve needed for most applications—Valve is not affected by box temperature, entering warm air, or warm suction lines—Responds instantly to both temperature and pressure.

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ing demonstration to accompany his talk. Refreshments were served by Floyd Roe and Ardon Abraham.

● **FURNITURE CITY CHAPTER, Grand Rapids, Mich., May 7**—The regular dinner meeting was held at the Oakwood Cafe, with some fifty members and visitors attending. Among the visitors were servicemen from Muskegon, Traverse City, South Haven and Battle Creek, and Austin Jones of Toledo, Kerest District Manager. After the business meeting, the third of the series of films and slides was shown by Mr. Thiebaut with Ed Maning conducting the quiz on the slides.

● **INDIANAPOLIS CHAPTER, Indianapolis, Ind., May 14**—During the business part of the meeting Mr. Bunton, Secretary, resigned his post because he was leaving the city, and in asking for volunteers H. W. Hoffmeyer accepted the post for the balance of the year. Mr. McKee of the Detroit Lubricator Co. talked on the merits of their valves. He illustrated his talk with sound motion pictures on the servicing of various types of valves.

● **INTERPROVINCIAL ASSOCIATION, Leaside, Ont., Apr. 29**—Officers and board members of the Association met at the Wagner Electric Division of Sangamo Co. at Leaside. The secretary reported on applications for membership and various standing committees reported on progress. Mr. Wood, Chairman of the Advisory Committee, gave a lengthy resume of the progress made on the Apprenticeship Act to date. Under the heading of new business, Mr. Marshall brought up the suggestion that a projector and screen be purchased out of the Association's funds and to be used for the showing of educational films in all chapters. The proposal is now under consideration.

● **KANSAS CITY CHAPTER, Kansas City, Mo., May 15**—Four new applications for membership were received and the men were initiated during the business session of the meeting. Vice-president Brown announced an examination for junior members wishing to be transferred to the status of active members. On the educational program a general discussion was held on the problems of selling service and on codes as they affect the refrigeration service industry.

● **KERN COUNTY CHAPTER, Kern County, Calif., May 9**—Meeting nights were definitely set in the future for the second Thursday of each month and the time at 8 P.M. A committee to be headed by P. B. Montgomery was appointed to draw up a new set of by-laws. The matter of an educational program was discussed and Roy Shannon was elected to the board of directors.

At the May 16th meeting P. B. Montgomery reported on the progress made in the by-laws, reading the proposals drawn up by the committee. They were accepted as read. W. W. Allison, who was present for the presentation of the chapter's charter, congratulated the committee on the work they had done on the by-laws. Mr. Allison then presented the charter and certificates of membership and membership cards to the members present. W. E. Janes gave an interesting talk on low temperature welding, after which the business meeting was continued and completed.

● **KEY CITY CHAPTER, Dubuque, Ia., June 5**—The annual election of officers was held at this time with the following being elected: Bob Miller, President; Paul Narr, Vice-president; Wilfred Nestor, Secy. & Treas.; Oliver Knopp, Asst. Secy. & Treas.; Dallas Bush, Sergeant-At-Arms. Educational—Clarence Broshave and Bob Miller. A discussion on advertising was the subject featured on the educational program.

● **LA CROSSE CHAPTER, La Crosse, Wis., June 7**—The constitution and by-laws committee reported on the progress made in their work with membership qualifications, one of the last items to be considered. The chapter has received word from the International Office informing them of the acceptance of the petition for charter. Plans are being made for the charter presentation during the latter part of July. Messrs. Galster, Flick and Reiman were appointed by President Sargent to serve on the charter meeting dinner committee. Chairman George Bernstein introduced Arthur Shaw of the Welding Department, Trane Co., who gave a demonstration of the use of silver solder, Sil-Fos and Fos copper with a welding torch and with Prest-O-Lite equipment. He explained the properties of the various materials and the applications for which they are designed. Copper to copper joints and copper to brass joints were made in the demonstration. His talk was followed by a general discussion on soldering and brazing.

● **LONG BEACH CHAPTER, Long Beach, Calif., May 8**—As usual the meeting was opened with an enjoyable dinner served by Bob Schooler, T. M. Langwell and Bob Nichols. A lucite gavel with a gold band attached was officially presented to President Les Gould by Bill Irving of Santa Monica. W. W. Allison, President of the California State Association, was introduced and after reporting on the Association introduced International Secretary H. T. McDermott, who gave a talk on the progress of the Society and the bright outlook for the future. The Secretary, reporting on the training films, stated that the series was scheduled to start the next meeting. Various members, throughout the night, were fined amounts from 50¢ to \$5.00 for offenses ranging from not paying attention at the meeting to neglect of their duties, and one notable fine of the evening was one of 50¢ assessed President Les Gould for improper use of his new gavel.

On April 10th the Eats Committee, headed by Tex Graham served a dinner of spaghetti and meat balls. After the business session the meeting was turned over to Mr. Vankinkle, Educational Chairman, who introduced Orle Tyler of Techne Electric. Mr. Tyler talked on the subject of servicing meters in the field and the results of improper care.

● **METROPOLITAN NEW YORK CHAPTER, West New York, N. J., June 14**—There were fifty members and five guests present for this charter presentation night of the chapter. Morris Robinson spoke on the good and welfare of the chapter, and Clarence Buschkopf welcomed the Metropolitan New York Chapter to the International Organization and presented the charter to Fred Asselmeyer, Tem-

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FOR BEVERAGE COUNTERS, FOOD CHESTS,
REACH-IN REFRIGERATORS, ETC.

- **IT'S GOOD-LOOKING**

Note the pleasing appearance of this neatly curved semi-circular unit.

- **IT'S WELL-MADE**

Coils are copper, electro-tinned. The framework is aluminum.

- **IT'S EFFICIENT**

Radial airflow assures uniform refrigerator temperatures.

- **IT SAVES SPACE**

Fan and motor are located out of sight, out of the way, inside the curve of the coils. Moisture cannot drip upon them.

- **IT REQUIRES NO ATTENTION**

Motor is permanently lubricated.

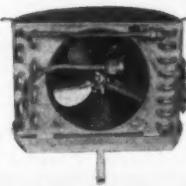
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Tubing, mounting and drain connections—all are easily reached.

- **IT'S MODERATELY PRICED**

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years. Every unit "built
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The charter presentation meeting of the Springfield, Mo., Chapter was held May 29 and the above picture shows charter members who were in attendance. Board members, appearing left to right in the picture at right are: Charles J. Champoux, 2nd Vice-Pres.; Wayne Moore, Secretary; Michael Cindric, President, receiving charter; M. L. Mercer, Treasurer; E. G. Hendrix, Director; Clarence Buschkopf, Acting International President, presenting charter; Harry Hoffmann, Sgt.-at-Arms.

porary President. Charter members were presented with membership certificates and cards. Expression of appreciation and good wishes came from the various visitors present and the meeting was adjourned with refreshments being served.

● MONUMENTAL CHAPTER, *Baltimore, Md.*, June 12—George J. Roche introduced the speaker of the evening, W. J. Simpson of the Texas Co., who gave a fine talk on "Proper Lubrication of Refrigerating Systems." This talk was followed by two movies, "Oil Processing" and a "Day at the Circus." Refreshments were served after the meeting.

● NOVA SCOTIA CHAPTER, *Halifax, N. S.*, June 10—The Nova Scotia Chapter had as a guest at the meeting Harry Parish who gave an interesting talk on frozen foods and frozen food lockers. A lunch was served after the meeting by Messrs. Wilson and Tredwell who saw to it that none went home hungry or thirsty.

● ORANGE COUNTY CHAPTER, *Orange County, Calif.*, May 9—The meeting opened with a dinner, followed by the introduction of officers and committee members. The president of each visiting chapter introduced their members, which included groups from San Diego, Los Angeles and Long Beach. Raffle prizes provided by wholesalers were won by Roger Pinkerton, Long Beach; Leonard Wahlestrom, Anaheim; R. T. Coffer, Los Angeles; and Wayne Marthrup, Long Beach. W. W. Allison, President of the California State Association, introduced National and State Officers. H. T. McDermott, International Secretary, a visitor of the evening, gave some highlights on the State Association and read



the objects of the Association. P. B. Reed, International Educational Director, was introduced next and provided some details on Certificate Membership.

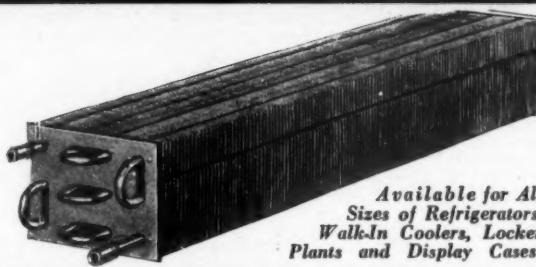
● SAN DIEGO CHAPTER, *San Diego, Cal.*, June 20—An extra large group of members and guests were present at the June meeting. The feature of the evening was the showing of the first film in the series of motion pictures. Five new applicants for membership were introduced and their applications were turned over to the membership committee. A large number of active members expressed the desire to take the certificate examination to be held in the near future.

The constitution and by-laws committee presented their revised by-laws and they were approved and accepted unanimously. George Nelson of the Russell Sales Agency, manufacturers' representatives located in Los Angeles, spoke at length on shaft seal trouble, prevention and service. Beer, coke and sandwiches were served by the entertainment committee.

● SPRINGFIELD MISSOURI CHAPTER, *Springfield, Mo.*, May 29—The highlight of the evening was the charter presentation by Clarence Buschkopf, Acting International President, and the presentation of membership certificates and cards to the charter members. On the educational program Harry Hoff-

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The construction of Rempe Fin Coils gives maximum prime and secondary surface for heat absorption. Refrigerants circulate freely—no obstructions or buckles at bends. All pipes are cleaned internally after fabrication.



Available for All
Sizes of Refrigerators,
Walk-In Coolers, Locker
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Tested under water with 400 lbs. air pressure—thoroughly dehydrated. End plates flanged for easy mounting.

Built of tinned copper tubes with copper or aluminum fins—or steel tubes with steel fins. Tubes and fins on steel coils are hot galvanized.

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**INSTALL IN 5 MINUTES
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LOTS OF 4—**\$225** EACH LOTS OF 10—**\$205** EACH

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BROOKLYN 7, N. Y.

man, Educational Chairman, presented a motion picture, then the meeting was adjourned. A very fine lunch was served after adjournment during which newly elected officers were introduced as follows: Michael Cindric, President; Earl Denney, 1st Vice-president; Charles J. Champoux, 2nd Vice-president; M. L. Mercer, Treasurer; Wayne Moore, Secretary; Harry Hoffman, Educational Chairman; E. G. Hendrix, Sergeant-At-Arms.

● SUNSHINE CITY CHAPTER, *St. Petersburg, Fla., May 7*—The chapter met at the Florida Power Annex Building with twelve members present. After the business meeting, the educational program consisted of a study of Lectures 13 to 19, inclusive. At the May 21st meeting, held in the same building, Lectures 20 through 28 were discussed.

● TRENTON CHAPTER, *Trenton, N. J., June 19*—Harry Jaeger, substituting for Al Koller, who was absent, read the applications of 14 new members as follows: Stephen Estenes, Jr., Dennis A. Foy, James A. Foy, William R. Habersaat, Bernard L. Hoffman, Victor J. Kushnerwich, Joseph Marut, Joseph Meara, Willard Parker, Robert B. Reeve, Rolf M. Schwind, Aristide H. Ungarini, William Urban and Charles F. Wood. The applicants were all voted in.

The meeting was turned over to Harry Jaeger who introduced Mr. Gardner of the Highside Chemical Co., who with several associates, conducted the education program of the evening, following which the members listened to the heavyweight championship bout.

● TWIN CITIES CHAPTER, *Minneapolis, Minn., May 7*—After reports were received from the treasurer, from the entertainment committee and other working committees, considerable discussion was devoted to trade relations and practices within the area. A committee was appointed by the president and charged with the work of making a further study and reporting at the next meeting. A committee was also appointed by the president to work on a proposed Minneapolis safety code.

● WESTERN MASSACHUSETTS CHAPTER, *Springfield, Mass., May 14*—George Boone, representing American Injector Co., was the speaker of the evening on the subject of oil separators, their operation and the difficulties caused by oil circulating through the system.

On May 28th members attended a dinner meeting which enjoyed a very large attendance. The dinner was followed by a short business meeting, then the balance of the evening was devoted to Al Sawyer, Dole Plate

Co., who was guest speaker of the evening. Mr. Sawyer spoke on the design of different types of cold plates, methods of installation and design features. He showed colored slides of their construction and application on various jobs, and passed out helpful information contained in their company's literature.

It was before a meeting of this chapter that Harry Klug, sales manager of the Specialty Division of Westinghouse Electric Corporation's East Springfield works, prophesied the use of two refrigerators in every home, One the conventional type, the other a special cabinet for frosted foods.

Discussing prospective development in future sales of home and farm cabinets, Mr. Klug pointed out that the home cabinet for frosted foods is designed to provide a lower temperature level than the common refrigeration



Western Massachusetts chapter dinner meeting which featured Al Sawyer of Dole Refrigerating Co. as the principal speaker

tor. He stressed the need of frosted food cabinets, particularly in the rural area.

LADIES AUXILIARY

● TRI-STATE CHAPTER, *Huntington, W. Va., June 12*—The members of the Auxiliary were the guests of the Tri-State Chapter, at a dinner given at the Hotel Frederick in Huntington, honoring the Acting President of the International Society, Clarence Buschkopf. Albert Albertsen acted as master of ceremonies. Enjoyable talks were given by Mr. Buschkopf, Joe Campbell, president of the local chapter, and Messrs. Brunton, Harrison and McElhaney, members of the local chapter. A brief business meeting was held following the dinner.

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ALUMINUM
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Also air-cooled and water-cooled
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Write for particulars.

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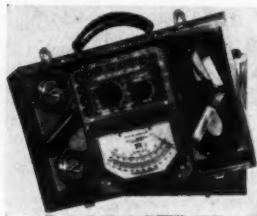
N. Y. 51, N. Y.

New and Improved Appliances

Addresses of Manufacturers represented in this department can be obtained from the Editor

Appliance Tester

A N APPLIANCE temperature tester for quick, accurate check of operating temperatures of refrigerating equipment and ovens of gas or electric ranges, the Model 60-JRT, is made by J-B-T Instruments, Inc., New Haven 8, Conn. The instrument checks four cold zones and two heat zones simultaneously.



Testing instrument

ously. Gives continuous readings outside the equipment being checked, so that operator can follow results of adjustments without opening doors.

It measures from -100° F. to 80° F. as a resistance thermometer; from 0° to 600° F. as a thermocouple millivoltmeter with bridge compensation for ambient temperatures. Also measures line voltage from 0 to 300 volts A.C.

frigerated show cases, and walk-in coolers, as well as in heating applications requiring a hermetically sealed snap-action thermostat.

They are actuated by the Spencer snap-acting disc mounted in thermal contact with the sealed housing. They will operate in any position and are unaffected by ordinary vibration. They are supplied, ready to install, with a heavy-duty, all rubber, two-conductor cord 30 inches long.



Klixon Thermostat

Minimum temperature setting is minus 10° F., maximum standard temperature setting 120° F. Minimum cooling temperature differential, with contacts closing on temperature rise, is 8° F.; minimum heating temperature differential, with contacts opening on temperature rise, is 10° F. Higher settings and wider differentials can be specified.

They are available in the following electrical ratings for A-C or D-C application: 115-230 volts A-C, 10 amps., $\frac{1}{2}$ h.p.; 125 volts D-C, 1 amp.

Belt Splicer

A NEW Belt Splicer, developed by Paxton-Mitchell Company, Omaha, Nebraska, provides an accurate, fast

method for cutting and punching belts for air-conditioning and generating equipment.

P-M Belt Splicers are made for use on 2" cog V-belts, 1" and 2" solid V-belts, and 4" and 5" flat belts. The operating principle is identical for each type of belt; when properly inserted in the tool, belts are cut and punched in the same operation to match standard splice fittings. Pro-



P-M belt splicer

vision is made for handling various types of splice-fittings by the use of different types of punches. The 2" V-Belt Splicer types are equipped with an auxiliary knife which grooves solid belts to permit the entrance of splice-fitting lip. The splicer for flat belts is equipped for handling various bolt arrangements. A simple change in the tool permits the splicing of two, three, or four-bolt coupling assemblies with the same splicer.

With the P-M Splicer, the splicing operation can be completed in one or two minutes, as compared with old methods requiring from twelve to fifteen minutes. Work can be done at the installation, eliminating trips to the service shop. This tool was placed in service at many points over the country several months ago and it has proved entirely satisfactory from a mechanical standpoint and a great time-saver. It is believed this new splicer will pay for itself many times over each season in time saved and elimination of belt troubles and resultant equipment stoppage.

Further information can be secured from Paxton-Mitchell Co.

REMOTE WATER COOLERS



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bubbler service, glass
filler service, photographic developing, etc.
Compact for floor, wall or ceiling installation.
Capacities 6 to 25 gallons.

Also available now—
cafeteria glass filler coolers,
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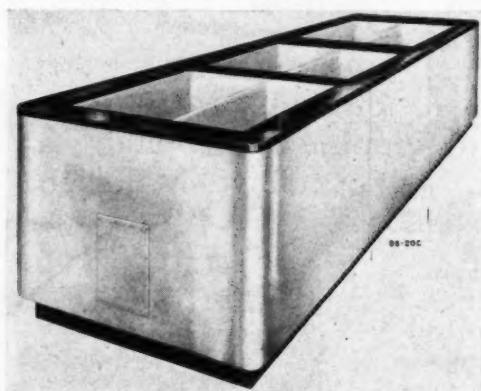
Electrimatic

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Display Cabinet

A FROZEN food display and storage cabinet, named the Biltwel Merchandizer, is being offered in 20 and 40 cubic feet basic units

"The larger dual bin basic unit, SS40E, provides 40 cubic feet of storage in two end sections, and the center sections for this unit are 20 cubic feet. Sections are 46" long, 48 $\frac{1}{4}$ " wide and 33" high.



Biltwel Merchandizer

to which center sections may be added or removed to meet changing space and traffic requirements.

"The Biltwel Merchandizer, manufactured by Fraser & Johnson Co., San Francisco, can be fitted to any market's space and storage need," Eddie Schroeder, sales manager, explains. Basic unit SS20E provides 20 cubic feet of storage space in two end sections, and as many 10-cubic-foot center sections may be added as needed. Sections are 46" long, 29" wide, and 33" high overall.

"Ambient air acts as an 'invisible lid,' keeping the cold air in. Thus these cabinets provide panoramic display, easy self-service and sub-zero storage at moderate operating cost."

Because it is open from every side, and is sectionally designed, the Biltwel Merchandizer fits into any wall, island, or aisle location. Some deliveries are now being made to distributors and refrigeration service engineers. Greatly increased production on the Merchandizer is scheduled starting this month.

Packaged Air Conditioning

A SELF-CONTAINED room air conditioning unit, which cools, filters, de-humidifies, as well as ventilates, is being manufactured by the recently organized Pacific Manufacturing Corporation, it is announced by Hugh C. Troth, president.

Production has started in a factory the new company purchased, at 5308 Blanche Avenue. The new unit, of window-type, has a $\frac{1}{2}$ -horsepower motor-driven, hermetically sealed, twin-cylinder compressor, which with the condensing coil is in the sec-



Air conditioner

tion of the cabinet located outside the window. The room-side section of the cabinet contains filter, cooling coil, outlet duct and motor-driven fan. The equipment is enclosed in a metal cabinet 22 $\frac{1}{2}$ inches wide, 34 $\frac{1}{2}$ inches long and 13 $\frac{1}{2}$ inches high.

The grained and clear-lacquered cabinet has several features, including insulation against heat and sound by a one-inch thick lining of fibre glass, an air filter easily accessible for changing through a removable cover on the front and special attachments for flush fitting and balanced weight.

Auto Coolers, Inc., affiliate of Pacific Manufacturing Corp., was organized at the end of the war for air conditioning design and research and is housed in Palo Alto, Calif. As the name indicates, the company is carrying on many types of air conditioning research. It has additional laboratory facilities at the Pacific Manufacturing Corp. plant.

Coil Winder

I DEAL Industries, Inc., 1003 Park Avenue, Sycamore, Illinois, announce a new coil winder drive, which is especially designed for fractional horsepower motor winding.

Operation has been simplified to only two controls and a clutch in obtaining a speed variation of 41 to 410 rpm. Turns are recorded by an odometer type counter which is in full view of the operator.

Driven by a $\frac{1}{4}$ hp. (1750 rpm.) motor through a spur gear drive, maximum torque or pulling power is delivered to the winding head. These spur gears are carefully machined to assure smooth, quiet operation without "back lash" or starting lag.

The torque is 77 inch pounds at "fast" speed and 770 inch pounds at "slow" speed. At a speed of 41 rpm. using an Ideal Universal Coil Winding Head, the Ideal Coil Winder Drive will wind a 7 $\frac{1}{2}$ " round coil of No. 6 AWG wire, or a 16 $\frac{1}{4}$ " coil of No. 9 AWG wire.

Floor space required is 19" x 20 $\frac{1}{4}$ ". Weight of Drive is 250 pounds.

A complete line of Ideal Coil Winder Heads for winding single phase and multi phase motor coils and armatures, also transformers and other coils, are available with the drive.

PORTABLE Elevator Mfg. Co., Bloomington, Ill., announce a new coin operated bottle vendor developed for Dr. Pepper Co. Only three moving parts control the vendor.



ARID-AIR BOTTLE COOLER

FOR HOTELS-TAVERNS-DRUG STORES, ETC.

Yes, we're making deliveries NOW... on the new ARID-AIR Bottle Cooler, with years-ahead features — sliding, disappearing stainless doors, adjustable removable partitions, roomy 504-bottle capacity, forced air circulation that cools top bottles first. Fully guaranteed.

WRITE TODAY—for complete details, prices, and service—Sales Dealer Plan.



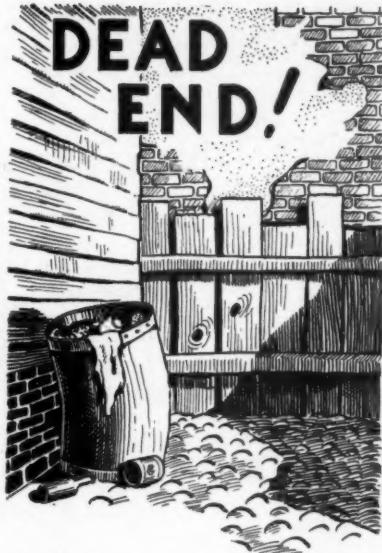
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SERVICE ENGINEER

79

July, 1946



Some men in some jobs in refrigeration face the prospect of running into a blind alley in their work.

Because of limited knowledge and skill, they can progress only so far, then—DEAD END!

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Please give me more information about Refrigeration and Air Conditioning Training, as promised in your Refrigeration Service Engineer July 1946 ad.	
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City.....	Zone..... State.....

FIRST SCHNACKE COMPRESSOR MANUFACTURED

THE first Schnacke compressors manufactured are a four-cylinder model which is applicable for fifteen, twenty or twenty-five horsepower. An eight-cylinder model is also coming through in several weeks, according to Frederick C. Schnacke, President of Schnacke, Inc., Evansville, Ind. The eight-cylinder model will be applicable for thirty, forty or fifty horsepower. The units will comprise compressor, base, motor, guard, belt, etc., as motors become available. The first units are being shipped less motors. Condensers and receivers are not being included in these units, at present, but will be manufactured at a later date.

One of the advantages of this line of compressors, according to the manufacturer, is the standardization of parts. The same sleeves, pistons, connecting rods, suction and discharge valves, etc. are used on both models of compressors. An additional model is also being engineered which will use many of the same parts, such as sleeves, pistons, valves, etc. which will be applicable for five, seven and one-half and ten horsepower, using two cylinders.

Miller Joins Schnacke, Inc.

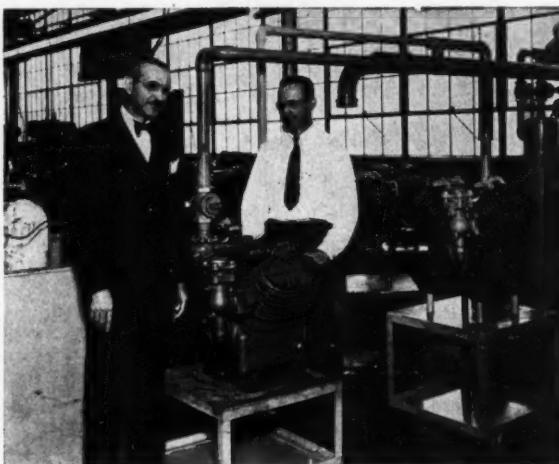
Eddy J. Miller, formerly of Servel, Inc. has been appointed Assistant Sales Manager of Schnacke, Inc. in the Air Conditioning and Refrigeration Compressor Division. His technical background and experience qualify him also as an Application Engineer.

After taking up studies in engineering at Evansville College, Mr. Miller affiliated himself with Servel, Inc. in 1936, assisting in the



E. J. MILLER

development of electrical refrigeration condensing units and compressors. Since 1941 he has been associated with Electric Refrigeration Sales and served as Application Engineer and later Sales Engineer. Since 1942 Mr. Miller has also assisted in the air



Frederick C. Schnacke, left, and his brother, right, with the four-cylinder compressors now being manufactured.

conditioning and refrigeration training courses in the Evansville Evening College of Vocational Training. He is a member of R.S.E.S.

MATHESON OPENS OFFICE IN JOLIET

DAVID ROSS, vice president of The Matheson Co. Inc., announces the opening of a new plant and office in Joliet, Illinois, located at Richards Street and Manhattan Road.

PARAGON ELECTRIC MOVES OFFICES

PARAGON Electric Company, manufacturers of Time Controls, announces the consolidation of its main office, formerly in Chicago, with its factory at Two Rivers, Wisconsin.

This change comes concurrently with several important expansions required to take care of the company's rapidly growing business. Mr. E. V. Platt, for many years Executive Vice President, has been elected President and continues as General Manager.

Did you say— No Refrigeration on a Meter-Miser.

Are you prepared to give prompt and efficient service when the original refrigerant has leaked out?

Don't pass up these calls because you haven't the original refrigerant—get

HERVEEN

the Ideal Replacement Gas

More and more service men are finding this gas measures up to their expectation for performance in Meter-Misers. Customer satisfaction has also been proven when HERVEEN replaces the original charge.

Who'll take this call?

HERVEEN is now stocked by most jobbers. If you are unable to obtain it through your jobber, write direct to

MODERN GAS CO., Inc.
MANUFACTURERS & REFINERS
1084 Bedford Ave.
Brooklyn 5, New York

Automatic Timing



Control time on a series of operations for a whole week . . . a different schedule every day . . . with a Paragon 700 Series Time Switch.

Controls time of heating, ventilating, lighting, pumping, flushing or similar operations. 6" calendar dial makes one complete revolution every 7 days. Dial trippers can be independently set for different daily ON and OFF schedules . . . can be set as close as three hours apart. \$24.50 List—Telechron Motored.

PARAGON ELECTRIC COMPANY
1636 Twelfth Street Two Rivers, Wisconsin



The move will permit closer coordination of sales, accounting, production and all other operations. To customers the consolidation will mean faster handling of orders, quicker shipments and better service. For the benefit of the trade in the Chicago area, a district sales office will remain at 37 West Van Buren Street.

SEGAL RETURNS TO KRAMER

After spending 2½ years overseas with the Armed Services, S. Charles Segal has returned to his position as Chief Engineer of the Kramer Trenton Company, Trenton, N. J., manufacturers of refrigeration and heat transfer equipment. He has been in constant contact with new developments in the refrigeration field and has devoted a good deal of attention to low temperature refrigeration incorporating automatic defrosting.

Mr. Segal has long been a recognized authority in the refrigeration and air conditioning industry. A considerable number of his papers have been published in the leading technical publications and is frequently called upon for lectures covering the field of heat transfer. During the short period since he returned he has given talks to refrigeration organizations in: Norfolk, Va., Richmond, Va., Philadelphia, Pa., and Trenton, N. J.

Mr. Segal received his Engineering Degree from Drexel Institute of Technology, Philadelphia, and his Teaching Degree from State Teachers' College, Trenton.

GUILD ELECTS NEW OFFICERS

THE Refrigeration & Air Conditioning Guild, Inc., of New York, N. Y., held its annual elections in May. Theodore A. Reina was re-elected unanimously as was the vice-president and general counsel, Nathan Edelstein. Jimmy Jordon, an up and coming executive of the Guild, was elected Secretary. He was also the winner of the membership drive contest having brought in a goodly number of applicants for membership to the Guild. Because of a fine job well done, the



S. C. SEGAL



THEO. A. REINA NATHAN EDELSTEIN

membership unanimously re-elected Mel Roth as Treasurer. Elected as regional vice-presidents were Jerry Penzel for Brooklyn, Leo Marks for Manhattan, Chick Navlen for Bronx, and Bela Spitz for Queens. George Wells was elected Sergeant-at-Arms. Elected to the Board of Directors were Joe Ulrich, Morris Berger, Robert A. E. Towse, Andrew Scaccia and James White.

NEW CATALOG

AUTOMATIC HEATING & COOLING SUPPLY are now preparing to mail their 1946 parts and supply catalog. This entirely new book has been delayed in release due to an unprecedented number of price changes, but does include all of the revisions up to date of mailing.

Preparation of the catalog has been based on the apparent desire of the Refrigeration, Air-Conditioning and Heating Dealer and Contractor for a list price book carefully prepared and illustrated with a substantial plastic binding for ease of handling. Many new items have been added including supplies for the heating trade such as sump pumps, water systems, Bell and Gossett line, and in fact, all items necessary for the complete serving of the Heating and Cooling industry.

Considerable remodeling and enlargement of space as well as added personnel has been necessary to properly handle this expansion, and the policy is and will continue to be "if it is available Automatic will have it."

SEEGER-SUNBEAM PROMOTION

PAUL F. McCLOSKEY is replacing Mr. Holscher as superintendent of the porcelain plant for Seeger-Sunbeam Corp. in Saint Paul. Mr. Holscher, due to ill health, is on indefinite leave.

Mr. McCloskey, graduate Ceramic Engineer of Penn State, 1935, has been with the company since 1940.

Says
GASKET JOE

I GIVE ORCHIDS
BY THE
BASKETS
TO THE
BOYS
WHO
CHECK
DOOR
GASKETS



3-A

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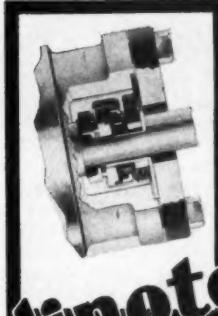
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FLAT SEAL FACES

— Uniform — flat —
smooth — seal faces.

POSITIVE FLEXIBILITY



A diaphragm acting
synthetic rubber ring.
No sliding fit between a rubber
part and shaft or sleeve.



HIGH GRADE MATERIALS

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bronze of known wear-
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the seal faces.

Ask your jobber about the

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SEAL**

MODERN DESIGN PRODUCTS CO.

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THERMAL DISTRIBUTOR FOR GENERAL MILLS

THERMAL COMPANY INC. announce their appointment by General Mills, Inc., as distributor for their line of small appliances. This line will eventually include pressure cookers, irons, toasters, waffle irons, mixers, etc. They expect to commence deliveries on the irons in limited quantities during the coming month. These will be available through stocks located at St. Paul, Minnesota; Great Falls, Montana; Des Moines and Cedar Rapids, Iowa and Milwaukee, Wisconsin.

DISTRIBUTORS ORGANIZE

INCORPORATION of the Arkansas Commercial Refrigerator Distributors Association was authorized June 7. Plans for the organization were completed in an initial meeting of the group on May 25. Officers of the association were announced as follows: Zack O. Jennings, Little Rock, president; Tom I. Steed, Pine Bluff, vice president; Herman Cumnock, Little Rock, treasurer; Raymond Kordsmeier, secretary. Other members of board of directors are: Pat J. Kirby and Paul Allen, Little Rock.

MIDWEST WHOLESALERS MEET

THE Midwest Refrigeration Equipment Wholesalers Association, meeting in Denver, Colorado, on June 7-8, was attended by 125 midwest refrigeration jobbers and manufacturers' representatives.

A closed business session was held by the



Williams and Company, Inc., Pittsburgh, Pa., have opened a branch office in Toledo, Ohio. In the above two views taken on opening day, left to right are: P. E. Boucher, Detroit Lubricator Co., Cleveland; Byron Halstead, Halstead & Mitchell, Pittsburgh, Pa.; John N. Blair, Mgr. Williams Refrigeration Supply Dept.; Robt. A. Beam, Refrig. Supply Dept. Mgr. Toledo Branch; and Geo. J. Schmitt, Mgr. Toledo Branch.

In the second view are: Arnold Kibby, Office Mgr. Toledo Branch; Ted Metzler, Owens Corning Fiberglass, Toledo; P. E. Boucher; Leo Binscognette, Counter man, Toledo Branch; Byron Halstead; John N. Blair; Robert A. Beam; Geo. J. Schmitt; and D. Veach, McQuay Co., Toledo.

Photos by Austin Jones, Kerestes, Pittsburgh.

jobbers on the morning of June 7th and an open meeting with the manufacturers' representatives in the afternoon. During the evening of June 7th, a banquet was held and the speaker of the evening was J. S. Kimmel of the Republic Electric Company, Davenport, Iowa.

A number of the jobbers attending this meeting accepted the invitation of the McCombs Refrigeration Company to make a tour of their business on Saturday morning, June 8th, and at 9:30 A.M. Saturday morning the group made a tour of the Gates Rubber Company.

TESCO OPENS BRANCH IN PATERSON

AS OF July 1, 1946, Tesco Distributors, formerly T. W. Binder Co. of Newark, New Jersey, will open a branch store at 54 Lafayette Street, Paterson, New Jersey.

Complete stock of refrigeration and air conditioning parts and supplies will be handled.

VANS SUPPLY NEW TUCSON BRANCH

VANS SUPPLY CO. of Long Beach, Calif., has opened a branch office in Tucson, Arizona, which will be under the management of B. B. Coffman. Mr. Coffman is a member of the Long Beach Chapter of the Refrigeration Service Engineers Society.

10 DAY SERVICE

Factory Rebuilt Units \$39.95
(ALL MODELS EXCEPT "C")

- Genuine Grunow Parts.
- Guaranteed 6 months.
- Just unfasten bolts holding board and ship complete.

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AUTHORIZED SERVICE, INC.
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Ask Your Jobber for
HASCObILT
Parts
SUCTION
and
DISCHARGE
VALVE, DISC, REEDS
and SPRINGS
for Conventional and Hermetically Type Compressors

If your jobber can't supply you, send for illustrated catalog and price list.

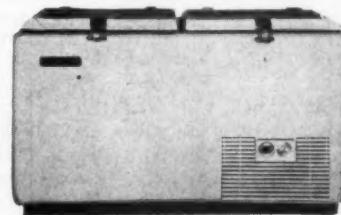
HASCO, INC.
GREENSBORO, N. C.

SERVICE ENGINEER

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BEN-HUR

A NAME THAT STANDS
FOR **DEPENDABLE** SERVICE
AND QUALITY IN FARM
AND HOME FREEZERS



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PERFORMANCE AND
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- ★ Lifetime Laboratory Tested
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Continuous Manufacturing Since 1911
634 E. KEEFE AVE., MILWAUKEE 12, WIS.

BEN-HUR

FARM & HOME FREEZERS

July, 1946

KLUG AND BAUGHMAN APPOINTED TO NEW POSTS

THE appointments of H. A. Klug as merchandise manager and J. B. Baughman as product supervisor in the Refrigeration Specialties department at the East Springfield, Mass., Works of the Westinghouse Electric Corporation have been announced by H. F. Hildreth, department manager.

As merchandise manager Mr. Klug will be responsible for sales of the department's products—milk, beverage and water coolers, farm freezers, room air conditioners, reach-in refrigerators and condensing units for other types of commercial refrigeration—to distributors, dealers, and manufacturers. Mr. Baughman will be in charge of product development and production.

MUELLER ST. LOUIS OFFICE

MUELLER BRASS CO. has opened a new office in St. Louis, Missouri at 2807 North Grand Blvd. E. H. Joern, the company's district representative for the past several years, will be in charge. John M. Zayac, recently transferred from the general sales department in Port Huron, Michigan has been added to the St. Louis Sales Organization. The company's Streamline pipe and fittings, non-ferrous forgings, rod, sand castings and screw machine products lines will be handled, for the district, through this new office.

TENNIS STAR JOINS KOLD-HOLD KOLD-HOLD MANUFACTURING

KOLD-HOLD COMPANY, of Lansing, Michigan, manufacturers of plate-type evaporators, has added Frederick (Ted) Schroeder, Jr., well-known tennis star, to its selling staff, on the west coast.

Following his recent discharge from the Navy, Ted joined Kold-Hold Pacific Sales Company at Los Angeles, calling on plate customers and prospects in California, Arizona, and Nevada.

In 1939 Ted was National Junior Champion on tennis. In 1941 he won the National Clay Court Men's Doubles. In 1940 and 1941 the Men's National Doubles Championship. In 1942 the Singles and Mixed Doubles National Championship.

At the present time Ted is a candidate for the 1946 U. S. Davis Cup Team. He will shortly represent the United States against the Philippine Islands at San Francisco, and will probably accompany the United States Team to Australia.

JERRY TYLER, WIFE AND SON DIE IN HOTEL LASALLE FIRE

JERRY TYLER, founder and President of the Tyler Fixture Corporation of Niles, Michigan, and a former President of the Commercial Refrigerator Manufacturers Association, died at St. Luke's Hospital, Chicago, on June 9th as a result of injuries received in the Hotel LaSalle fire. He survived only a few days his wife, Mary Witt Tyler, and an only son, Michael, age 12, who perished in the fire. Mr. Tyler never regained consciousness after his vain attempt to save the lives of his family.



JERRY TYLER

Mr. Tyler was born in Saginaw, Michigan, September 21, 1900, was graduated from Traverse City High School in 1918 and later attended the United States Naval Academy at Annapolis, and Colorado School of Mines. In 1927 he founded the Tyler Sales Fixture Company, which moved to Niles in 1932—reorganized as the Tyler Fixture Corporation in 1937. He is survived by his parents, Prof. Leon L. and Minnie Tyler, and a brother, Robert L. Tyler, all of Niles. Mr. Leon L. Tyler and Robert L. Tyler, Vice-President in charge of Sales, are both members of the Board of Directors of the Tyler Fixture Corporation.

Jerry Tyler's prominence in the commercial refrigeration industry began shortly after his founding of the Tyler company in 1927 and continued with the growth of his company which now maintains two modern plants in Niles, one in Cobleskill, New York and another in Waxahachie, Texas. He is credited with revolutionizing the production of refrigerated display cases, having introduced welded steel construction and assembly line methods, in the early 30's. Mr. Tyler was also a pioneer in the home locker field, having acquired the facilities of the Harder Refrigerator Corporation of Cobleskill, New York in 1944 and having introduced the Harderfreez home locker to the national market in 1945.

Mr. Tyler was active in community and political affairs; he was a trustee of Alma College, was a member of the Republican State Central Committee, of the Michigan

Thank You!

... for the overwhelming response you have given our new Catalog. Your orders are being filled as fast as we can possibly fill them.

We wish to also thank you for the many compliments received on the type of Catalog we printed. Our Catalog was designed for the serviceman. It is gratifying to know that it lives up to your requirements.

Our only regrets are that parts are not always available in the quantities you desire and that prices are still changing which necessitates your referring to our discount sheet.



CHASE

REFRIGERATION SUPPLY COMPANY
546-48 W. 119th St., CHICAGO 28, ILL.

BESTOLIFE
LEAD SEAL JOINT SEALING
AND ANTI-SEIZE
PIPE JOINT COMPOUND

'BESTOLIFE has been used successfully in the Refrigeration industry for years.

'BESTOLIFE is non-corrosive and non-expanding. It takes the place of litharge and glycerine. Does not harden or dry out. Protects threads, keeps pipe joints tight yet easily broken apart.

Prove 'BESTOLIFE'S efficiency for yourself. Trial 1 1/4 pound can sent anywhere in the U. S. for \$1.00. This charge cancelled if not entirely satisfactory.

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I. H. GRANCELL

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Millions now in daily use

* Aerovox motor capacitors are serving as original equipment or as replacements in the majority of electric refrigerators. Ask your local Aerovox supplier about them. Ask for latest Aerovox catalog—or write us.



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LEAKS?

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VISOLEAK

VISOLEAK detects even the smallest leaks before they cause damage to expensive refrigeration systems. Years of use prove it safe, economical, easy to use.

NEW CHARGING SET

The VISOLEAK Charging Set was developed to inject VISOLEAK, add refrigerant oil, or recharge sealed units. For use on all types of refrigeration systems without danger of introducing air or foreign matter.

Charging Set—complete with hoses. **\$7.50**
Filler only—without hoses. **6.00**

WHOLESALE PRICES		CASE LOTS	
4 ounce bottle.	1.00	48 bottles	
8 ounce bottle.	1.75	24 bottles	
1 pint bottle...	3.00	24 bottles	
1 quart bottle...	5.00	12 bottles	
1 gallon can...	16.00	6 cans	

SAVE 10% ON CASE LOTS

See your refrigeration supply jobber or write for complete information.

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REPAIR SERVICE

One year guarantee

Cold Controls • Pressure Switches

Expansion Valves

Look and Work Like New Controls

Original Factory Specifications

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Y.M.C.A. Committee, and of the state Aviation Advisory Committee. He was a member of the Presbyterian Church, Masons, Elks, Rotary Club, Kappa Sigma Fraternity, and the American Legion.

According to company officials The Tyler Fixture Corporation will continue to develop Jerry Tylers aggressive research, manufacturing and sales program.

Robert L. Tyler, formerly Vice President, was appointed President of the Company June 13, to succeed his brother. Other Tyler officials include Joseph W. Krall, Executive Vice-President; George H. Mayhew, Secretary and Treasurer; Carl Eliason, Vice-President in charge of national accounts, and Earl Kent, director of Production. Subsidiaries in Cobleskill and Waxahachie are managed by Sam D. Vander Weg and Hal Wickham.

PERFEX OFFICES AT CLEVELAND AND DETROIT

THE Perfex Corporation of Milwaukee, manufacturers of Automatic Temperature Controls and Industrial Engine Radiators, on May 15 opened branch offices at Cleveland and Detroit.



C. M. Campbell



S. D. Horner

In charge of the Cleveland branch, located at 2010 E. 102nd St., is Charles M. Campbell who joined Perfex in 1944 as Sales Engineer.

Campbell is a graduate of Purdue University '35, and prior to coming to Perfex spent 10 years in sales work.

The Detroit office at 9545 Grand River Avenue is under the supervision of S. David Horner. Horner spent three and one-half years in the Navy, and received his honorable discharge as Lieutenant Commander just prior to joining Perfex in January, 1946, as Sales Engineer. Prior to his military service, Horner was associated with the Powers Regulator Company, Chicago, and the Carrier Corporation of Syracuse, New York.

Refrigeration Units, Parts and Supplies

26,000 square feet of Shop and Warehouse Space

Same Day Service On Items In Stock

1946 CATALOG CANCELLED

Price increases and other conditions beyond our control make it impossible to issue a complete and up-to-date catalog. Therefore, we will not publish a catalog in 1946.

SERVICE PARTS COMPANY

2511 Lake Street

Melrose Park, Ill.



BETTER BUYERS Specify SHANK DEHYDRATORS

Refrigeration men who know specify Shank Dehydrators because they are low in cost, light weight, modern design with leak proof joints.

ELIMINATE REFILLING

The low cost of Shank Dehydrators makes it more economical to replace used dehydrators than to refill.

Two sizes: Large—2" O.D. $\frac{1}{4}$ & $\frac{3}{4}$ " M. Flare—5", $8\frac{1}{4}$ " and $8\frac{5}{8}$ " over all length. Small—1" O.D. $\frac{3}{4}$ " M. Flare— $5\frac{1}{4}$ " & $7\frac{1}{8}$ " overall length. Furnished complete and filled with Calcium Chloride, Activated Alumina or Silica Gel.

IMMEDIATE DELIVERY

Write today for prices.

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625 W. Jackson Blvd., Chicago 6, Ill.

GASKETS



Write for complete catalog.

CHICAGO-WILCOX MFG. CO.
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Play safe and specify CHICAGO-WILCOX gaskets for every refrigeration need. Our complete gasket service provides a dependable source of supply to meet your requirements. Get full details today.

ARE YOU Equipping a new Serviceman

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We have prepared a very helpful list of items suggested as a minimum stock. Several lists are available. Check the ones you want.

- Service Tools
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Use your letterhead and send your inquiry to Dept. A.

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Each Control Reset and Cycle Tested	\$2.00
Domestic Cold Controls (Modern Type)	\$2.00
Commercial Controls (Press. or Temp.)	2.50
Commercial Dual Controls	3.00
Automatic Water Valves	2.00
Automatic Expansion Valves	1.75
Thermostatic Expansion Valves	3.00

All Prices F.O.B. Chicago and subject to change without notice

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5525 Lawrence Avenue—Chicago 30, Illinois
Phone PENnsacola 3303

KEROTEST ACQUIRES SECURITY VALVE AND WILJACK VALVE

THE Security Valve Division of Security Engineering Company, Inc., Whittier, California, a member of Dresser Industries, Inc., has been acquired by the Kerotest Manufacturing Co., Pittsburgh valve manufacturer, according to an announcement today by Edward G. Mueller, Kerotest president.

A new manufacturing plant has been acquired at Slauson and Alcoa Avenues, Los Angeles, where the present line of Security Cast and Forged Steel Valves and Kerotest Valves will be produced for Pacific Coast and Western distribution.

At the same time, Mr. Mueller announced the formation of a new company—The Kerotest Pacific Company (to be operated as a subsidiary of the parent Pittsburgh company, Kerotest Manufacturing Company)—in order to more satisfactorily serve the many customers of both Security Valve and Kerotest throughout the Western states.

The general sales offices will be located at 3805 E. Slauson Avenue, with district sales offices in San Francisco, Houston, Chicago, Odessa and New York. Sales representa-

tives will be located in Tulsa, New Orleans, Richmond, Va., and Charleston, W. Va.

The acquisition of the Wiljack Company, South Pasadena, California, manufacturers of bar stock valves in carbon and stainless steel was also announced by the Kerotest Mfg. Co., shortly after announcement of formation of the Kerotest Pacific Co.

xx

KRAMER TRENTON COMPANY MOVES OFFICES

THE Kramer Trenton Co., manufacturers of heat transfer products, has completed the expansion of its production facilities by moving its general offices from the Brunswick Avenue plant of the company in Trenton, N. J. to the Olden Avenue plant in the same city. Relocation of the offices will consolidate the engineering department research laboratory and general offices at one location while at the same time making more space available for manufacturing at the Brunswick Avenue plant, all of which will be devoted to coil production. Forced convection units, Thermobank automatic defrosting systems and other products of the company will be manufactured at the Olden Avenue plant.

CONTROLS—VALVES REPAIRED OR EXCHANGED

We completely disassemble controls, clean, test, check and replace defective or broken parts, and set for proper temperatures.

Domestic Cold Controls (Modern).....	\$2.50
Commercial Controls (Pres. or Temp.)....	2.75
Automatic Expansion Valves.....	1.75
Thermostatic Expansion Valves.....	3.00
Automatic Water Valves.....	3.00

90 day guarantee ★ Prices F.O.B. Chicago

Refrigeration Control Service
4840 S. Springfield Ave., Chicago 32, Ill.

CONTROL REPAIR SERVICE

Power elements and domestic controls reconditioned equal to new at a small cost. All work guaranteed for one year. Prices upon request.

United Speedometer Repair Co.
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DID YOU GET YOURS?

If not, write on your letterhead
today for new spring & summer

DEPENDABOOK

THE HARRY ALTER CO.

1728 SO. MICHIGAN AVE. Two Big Warehouses 134 LAFAYETTE ST.
CHICAGO 16, ILL. To Serve You NEW YORK 13, N.Y.





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Learn Domestic and Commercial Refrigeration and Air Conditioning Maintenance & Service.

Full or part time Residence course or
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REFRIGERATION SUPPLIES

Servicemen—Put us to work for you when you need parts and supplies. Most items are now in stock ready for delivery or shipment.

You can DEPEND on BLYTHE

An inquiry or order on your letterhead will be promptly and efficiently handled.

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JUSTRITE

JUSTRITE FLASHLIGHT
No. 17-S TOPS THEM ALL

Model No. 17-S
with
Honeycomb Lens
for spread light
List Price
\$4.00 each

Justrite Service Flashlight No. 17-S, approved by Underwriters' Laboratories, Inc., and by U. S. Bureau of Mines, is ideal for all types of jobs. Has unbreakable plastic case. Provides a brilliant "spot" beam of 1800 candle-power. For larger spread beam it can be used with the new Justrite Honeycomb Lens which throws a circle of clear even light 3 ft. in diameter at 8-ft. distance.

See your supplier or
write direct for details.

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STANGARD

Prime Surface **COLD PLATES**



For Maximum Refrigerating Efficiency

THE STANGARD DICKERSON CORP.

46-76 Oliver Street • Newark 5, N.J.



means reserve power to meet peak load demands. Use genuine Servel parts to maintain top efficiency.

Call your local Servel distributor or authorized parts jobber.

Electric Refrigeration Division

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For
TEMPERATURE
For
MOTOR OPERATION

2 Recorders*
For Less Than
The Price of One



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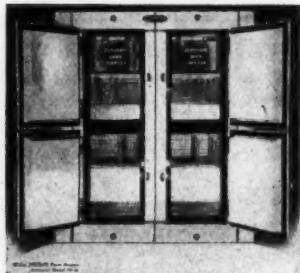


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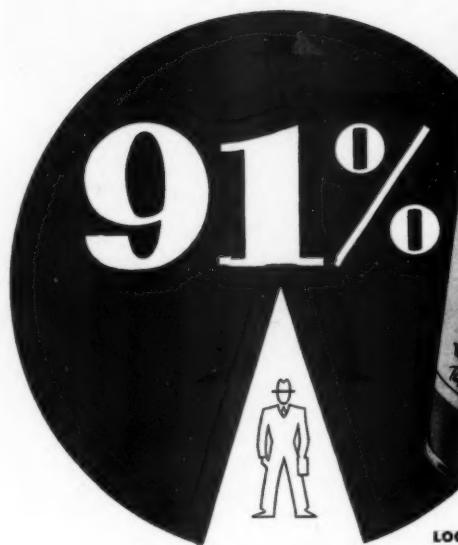
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